

Test 1

LISTENING

SECTION 1 Questions 1–10

Complete the form below.

Write **ONE WORD AND/OR A NUMBER** for each answer.

CRIME REPORT FORM	
Type of crime:	theft
Personal information	
<i>Example</i>	
Name	Louise <i>Taylor</i>
Nationality	1
Date of birth	14 December 1977
Occupation	interior designer
Reason for visit	business (to buy antique 2
Length of stay	two months
Current address	3 Apartments (No 15)
Details of theft	
Items stolen	– a wallet containing approximately 4 £ – a 5
Date of theft	6
Possible time and place of theft	
Location	outside the 7 at about 4 pm
Details of suspect	– some boys asked for the 8 then ran off – one had a T-shirt with a picture of a tiger – he was about 12, slim build with 9 hair
Crime reference number allocated	
10	

SECTION 2 Questions 11–20

Induction talk for new apprentices

Questions 11 and 12

Choose **TWO** letters, **A–E**.

Which **TWO** pieces of advice for the first week of an apprenticeship does the manager give?

- A** get to know colleagues
- B** learn from any mistakes
- C** ask lots of questions
- D** react positively to feedback
- E** enjoy new challenges

Questions 13 and 14

Choose **TWO** letters, **A–E**.

Which **TWO** things does the manager say mentors can help with?

- A** confidence-building
- B** making career plans
- C** completing difficult tasks
- D** making a weekly timetable
- E** reviewing progress

Test 1

Questions 15–20

What does the manager say about each of the following aspects of the company policy for apprentices?

Write the correct letter, **A**, **B** or **C**, next to Questions 15–20.

- A** It is encouraged.

B There are some restrictions.

C It is against the rules.

Company policy for apprentices

- | | | |
|----|-----------------------|-------|
| 15 | Using the internet | |
| 16 | Flexible working | |
| 17 | Booking holidays | |
| 18 | Working overtime | |
| 19 | Wearing trainers | |
| 20 | Bringing food to work | |

SECTION 3 Questions 21–30

Questions 21–25

Choose the correct letter, **A**, **B** or **C**.

Cities built by the sea

- 21 Carla and Rob were surprised to learn that coastal cities
- A contain nearly half the world's population.
 - B include most of the world's largest cities.
 - C are growing twice as fast as other cities.
- 22 According to Rob, building coastal cities near to rivers
- A may bring pollution to the cities.
 - B may reduce the land available for agriculture.
 - C may mean the countryside is spoiled by industry.
- 23 What mistake was made when building water drainage channels in Miami in the 1950s?
- A There were not enough of them.
 - B They were made of unsuitable materials.
 - C They did not allow for the effects of climate change.
- 24 What do Rob and Carla think that the authorities in Miami should do immediately?
- A take measures to restore ecosystems
 - B pay for a new flood prevention system
 - C stop disposing of waste materials into the ocean
- 25 What do they agree should be the priority for international action?
- A greater coordination of activities
 - B more sharing of information
 - C agreement on shared policies

Test 1

Questions 26–30

What decision do the students make about each of the following parts of their presentation?

Choose **FIVE** answers from the box and write the correct letter, **A–G**, next to Questions 26–30.

Decisions

- A** use visuals
- B** keep it short
- C** involve other students
- D** check the information is accurate
- E** provide a handout
- F** focus on one example
- G** do online research

Parts of the presentation

- 26 Historical background
- 27 Geographical factors
- 28 Past mistakes
- 29 Future risks
- 30 International implications

SECTION 4 Questions 31–40

Complete the notes below.

Write **ONE WORD ONLY** for each answer.

Marine renewable energy (ocean energy)

Introduction

More energy required because of growth in population and 31

What's needed:

- renewable energy sources
- methods that won't create pollution

Wave energy

Advantage: waves provide a 32 source of renewable energy

Electricity can be generated using offshore or onshore systems

Onshore systems may use a reservoir

Problems:

- waves can move in any 33
- movement of sand, etc. on the 34 of the ocean may be affected

Tidal energy

Tides are more 35 than waves

Planned tidal lagoon in Wales:

- will be created in a 36 at Swansea
- breakwater (dam) containing 16 turbines
- rising tide forces water through turbines, generating electricity
- stored water is released through 37 , driving the turbines in the reverse direction

Advantages:

- not dependent on weather
- no 38 is required to make it work
- likely to create a number of 39

Problem:

- may harm fish and birds, e.g. by affecting 40 and building up silt

Ocean thermal energy conversion

Uses a difference in temperature between the surface and lower levels

Water brought to the surface in a pipe

READING

READING PASSAGE 1

You should spend about 20 minutes on **Questions 1–13**, which are based on Reading Passage 1 below.

THE IMPORTANCE OF CHILDREN'S PLAY

Brick by brick, six-year-old Alice is building a magical kingdom. Imagining fairy-tale turrets and fire-breathing dragons, wicked witches and gallant heroes, she's creating an enchanting world. Although she isn't aware of it, this fantasy is helping her take her first steps towards her capacity for creativity and so it will have important repercussions in her adult life.

Minutes later, Alice has abandoned the kingdom in favour of playing schools with her younger brother. When she bosses him around as his 'teacher', she's practising how to regulate her emotions through pretence. Later on, when they tire of this and settle down with a board game, she's learning about the need to follow rules and take turns with a partner.

'Play in all its rich variety is one of the highest achievements of the human species,' says Dr David Whitebread from the Faculty of Education at the University of Cambridge, UK. 'It underpins how we develop as intellectual, problem-solving adults and is crucial to our success as a highly adaptable species.'

Recognising the importance of play is not new: over two millennia ago, the Greek philosopher Plato extolled its virtues as a means of developing skills for adult life, and ideas about play-based learning have been developing since the 19th century.

But we live in changing times, and Whitebread is mindful of a worldwide decline in play, pointing out that over half the people in the world now live in cities. 'The opportunities for free play, which I experienced almost every day of my childhood, are becoming increasingly scarce,' he says. Outdoor play is curtailed by perceptions of risk to do with traffic, as well as parents' increased wish to protect their children from being the victims of crime, and by the emphasis on 'earlier is better' which is leading to greater competition in academic learning and schools.

International bodies like the United Nations and the European Union have begun to develop policies concerned with children's right to play, and to consider implications for leisure facilities and educational programmes. But what they often lack is the evidence to base policies on.

'The type of play we are interested in is child-initiated, spontaneous and unpredictable – but, as soon as you ask a five-year-old "to play", then you as the researcher have intervened,' explains Dr Sara Baker. 'And we want to know what the long-term impact of play is. It's a real challenge.'

Table 1. Continued

Test 1

Questions 1–8

Complete the notes below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 1–8 on your answer sheet.

Children's play

Uses of children's play

- building a 'magical kingdom' may help develop 1
- board games involve 2 and turn-taking

Recent changes affecting children's play

- populations of 3 have grown
- opportunities for free play are limited due to
 - fear of 4
 - fear of 5
 - increased 6 in schools

International policies on children's play

- it is difficult to find 7 to support new policies
- research needs to study the impact of play on the rest of the child's 8

Questions 9–13

Do the following statements agree with the information given in Reading Passage 1?

In boxes 9–13 on your answer sheet, write

TRUE if the statement agrees with the information
FALSE if the statement contradicts the information
NOT GIVEN if there is no information on this

- 9 Children with good self-control are known to be likely to do well at school later on.
- 10 The way a child plays may provide information about possible medical problems.
- 11 Playing with dolls was found to benefit girls' writing more than boys' writing.
- 12 Children had problems thinking up ideas when they first created the story with Lego.
- 13 People nowadays regard children's play as less significant than they did in the past.

READING PASSAGE 2

You should spend about 20 minutes on **Questions 14–26**, which are based on Reading Passage 2 below.

The growth of bike-sharing schemes around the world

How Dutch engineer Luud Schimmelpennink helped to devise urban bike-sharing schemes

- A** The original idea for an urban bike-sharing scheme dates back to a summer's day in Amsterdam in 1965. Provo, the organisation that came up with the idea, was a group of Dutch activists who wanted to change society. They believed the scheme, which was known as the Witte Fietsenplan, was an answer to the perceived threats of air pollution and consumerism. In the centre of Amsterdam, they painted a small number of used bikes white. They also distributed leaflets describing the dangers of cars and inviting people to use the white bikes. The bikes were then left unlocked at various locations around the city, to be used by anyone in need of transport.
- B** Luud Schimmelpennink, a Dutch industrial engineer who still lives and cycles in Amsterdam, was heavily involved in the original scheme. He recalls how the scheme succeeded in attracting a great deal of attention – particularly when it came to publicising Provo's aims – but struggled to get off the ground. The police were opposed to Provo's initiatives and almost as soon as the white bikes were distributed around the city, they removed them. However, for Schimmelpennink and for bike-sharing schemes in general, this was just the beginning. 'The first Witte Fietsenplan was just a symbolic thing,' he says. 'We painted a few bikes white, that was all. Things got more serious when I became a member of the Amsterdam city council two years later.'
- C** Schimmelpennink seized this opportunity to present a more elaborate Witte Fietsenplan to the city council. 'My idea was that the municipality of Amsterdam would distribute 10,000 white bikes over the city, for everyone to use,' he explains. 'I made serious calculations. It turned out that a white bicycle – per person, per kilometre – would cost the municipality only 10% of what it contributed to public transport per person per kilometre.' Nevertheless, the council unanimously rejected the plan. 'They said that the bicycle belongs to the past. They saw a glorious future for the car,' says Schimmelpennink. But he was not in the least discouraged.
- D** Schimmelpennink never stopped believing in bike-sharing, and in the mid-90s, two Danes asked for his help to set up a system in Copenhagen. The result was the world's first large-scale bike-share programme. It worked on a deposit: 'You dropped a coin in the bike and when you returned it, you got your money back.' After setting up the Danish system, Schimmelpennink decided to try his luck again

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Test 1

Questions 14–18

Reading Passage 2 has seven paragraphs, **A–G**.

Which paragraph contains the following information?

Write the correct letter, **A–G**, in boxes 14–18 on your answer sheet.

NB You may use any letter more than once.

- 14 a description of how people misused a bike-sharing scheme
- 15 an explanation of why a proposed bike-sharing scheme was turned down
- 16 a reference to a person being unable to profit from their work
- 17 an explanation of the potential savings a bike-sharing scheme would bring
- 18 a reference to the problems a bike-sharing scheme was intended to solve

Questions 19 and 20

Choose **TWO** letters, **A–E**.

Write the correct letters in boxes 19 and 20 on your answer sheet.

Which **TWO** of the following statements are made in the text about the Amsterdam bike-sharing scheme of 1999?

- A** It was initially opposed by a government department.
- B** It failed when a partner in the scheme withdrew support.
- C** It aimed to be more successful than the Copenhagen scheme.
- D** It was made possible by a change in people's attitudes.
- E** It attracted interest from a range of bike designers.

Questions 21 and 22

Choose **TWO** letters, **A–E**.

Write the correct letters in boxes 21 and 22 on your answer sheet.

Which **TWO** of the following statements are made in the text about Amsterdam today?

- A** The majority of residents would like to prevent all cars from entering the city.
- B** There is little likelihood of the city having another bike-sharing scheme.
- C** More trips in the city are made by bike than by any other form of transport.
- D** A bike-sharing scheme would benefit residents who use public transport.
- E** The city has a reputation as a place that welcomes cyclists.

Test 1

Questions 23–26

Complete the summary below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 23–26 on your answer sheet.

The first urban bike-sharing scheme

The first bike-sharing scheme was the idea of the Dutch group Provo. The people who belonged to this group were **23** They were concerned about damage to the environment and about **24** , and believed that the bike-sharing scheme would draw attention to these issues. As well as painting some bikes white, they handed out **25** that condemned the use of cars.

However, the scheme was not a great success: almost as quickly as Provo left the bikes around the city, the **26** took them away. According to Schimmelpennink, the scheme was intended to be symbolic. The idea was to get people thinking about the issues.

READING PASSAGE 3

You should spend about 20 minutes on **Questions 27–40**, which are based on Reading Passage 3 below.

Motivational factors and the hospitality industry

A critical ingredient in the success of hotels is developing and maintaining superior performance from their employees. How is that accomplished? What Human Resource Management (HRM) practices should organizations invest in to acquire and retain great employees?

Some hotels aim to provide superior working conditions for their employees. The idea originated from workplaces – usually in the non-service sector – that emphasized fun and enjoyment as part of work–life balance. By contrast, the service sector, and more specifically hotels, has traditionally not extended these practices to address basic employee needs, such as good working conditions.

Pfeffer (1994) emphasizes that in order to succeed in a global business environment, organizations must make investment in Human Resource Management (HRM) to allow them to acquire employees who possess better skills and capabilities than their competitors. This investment will be to their competitive advantage. Despite this recognition of the importance of employee development, the hospitality industry has historically been dominated by underdeveloped HR practices (Lucas, 2002).

Lucas also points out that ‘the substance of HRM practices does not appear to be designed to foster constructive relations with employees or to represent a managerial approach that enables developing and drawing out the full potential of people, even though employees may be broadly satisfied with many aspects of their work’ (Lucas, 2002). In addition, or maybe as a result, high employee turnover has been a recurring problem throughout the hospitality industry. Among the many cited reasons are low compensation, inadequate benefits, poor working conditions and compromised employee morale and attitudes (Maroudas et al., 2008).

Ng and Sorensen (2008) demonstrated that when managers provide recognition to employees, motivate employees to work together, and remove obstacles preventing effective performance, employees feel more obligated to stay with the company. This was succinctly summarized by Michel et al. (2013): ‘[P]roviding support to employees gives them the confidence to perform their jobs better and the motivation to stay with the organization.’ Hospitality organizations can therefore enhance employee motivation and retention through the development and improvement of their working conditions. These conditions are inherently linked to the working environment.

While it seems likely that employees’ reactions to their job characteristics could be affected by a predisposition to view their work environment negatively, no evidence exists to support this hypothesis (Spector et al., 2000). However, given the opportunity, many people will find

Test 1

something to complain about in relation to their workplace (Poulston, 2009). There is a strong link between the perceptions of employees and particular factors of their work environment that are separate from the work itself, including company policies, salary and vacations.

Such conditions are particularly troubling for the luxury hotel market, where high-quality service, requiring a sophisticated approach to HRM, is recognized as a critical source of competitive advantage (Maroudas et al., 2008). In a real sense, the services of hotel employees represent their industry (Schneider and Bowen, 1993). This representation has commonly been limited to guest experiences. This suggests that there has been a dichotomy between the guest environment provided in luxury hotels and the working conditions of their employees.

It is therefore essential for hotel management to develop HRM practices that enable them to inspire and retain competent employees. This requires an understanding of what motivates employees at different levels of management and different stages of their careers (Enz and Siguaw, 2000). This implies that it is beneficial for hotel managers to understand what practices are most favorable to increase employee satisfaction and retention.

Herzberg (1966) proposes that people have two major types of needs, the first being extrinsic motivation factors relating to the context in which work is performed, rather than the work itself. These include working conditions and job security. When these factors are unfavorable, job dissatisfaction may result. Significantly, though, just fulfilling these needs does not result in satisfaction, but only in the reduction of dissatisfaction (Maroudas et al., 2008).

Employees also have intrinsic motivation needs or motivators, which include such factors as achievement and recognition. Unlike extrinsic factors, motivator factors may ideally result in job satisfaction (Maroudas et al., 2008). Herzberg's (1966) theory discusses the need for a 'balance' of these two types of needs.

The impact of fun as a motivating factor at work has also been explored. For example, Tews, Michel and Stafford (2013) conducted a study focusing on staff from a chain of themed restaurants in the United States. It was found that fun activities had a favorable impact on performance and manager support for fun had a favorable impact in reducing turnover. Their findings support the view that fun may indeed have a beneficial effect, but the framing of that fun must be carefully aligned with both organizational goals and employee characteristics. 'Managers must learn how to achieve the delicate balance of allowing employees the freedom to enjoy themselves at work while simultaneously maintaining high levels of performance' (Tews et al., 2013).

Deery (2008) has recommended several actions that can be adopted at the organizational level to retain good staff as well as assist in balancing work and family life. Those particularly appropriate to the hospitality industry include allowing adequate breaks during the working day, staff functions that involve families, and providing health and well-being opportunities.

Questions 27–31

Look at the following statements (Questions 27–31) and the list of researchers below.

Match each statement with the correct researcher, **A–F**.

Write the correct letter, **A–F**, in boxes 27–31 on your answer sheet.

NB You may use any letter more than once.

- 27 Hotel managers need to know what would encourage good staff to remain.
- 28 The actions of managers may make staff feel they shouldn't move to a different employer.
- 29 Little is done in the hospitality industry to help workers improve their skills.
- 30 Staff are less likely to change jobs if cooperation is encouraged.
- 31 Dissatisfaction with pay is not the only reason why hospitality workers change jobs.

List of Researchers

- A Pfeffer
- B Lucas
- C Maroudas et al.
- D Ng and Sorensen
- E Enz and Siguaw
- F Deery

Test 1

Questions 32–35

Do the following statements agree with the claims of the writer in Reading Passage 3?

In boxes 32–35 on your answer sheet, write

YES	if the statement agrees with the claims of the writer
NO	if the statement contradicts the claims of the writer
NOT GIVEN	if it is impossible to say what the writer thinks about this

- 32 One reason for high staff turnover in the hospitality industry is poor morale.
- 33 Research has shown that staff have a tendency to dislike their workplace.
- 34 An improvement in working conditions and job security makes staff satisfied with their jobs.
- 35 Staff should be allowed to choose when they take breaks during the working day.

Questions 36–40

Complete the summary below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 36–40 on your answer sheet.

Fun at work

Tews, Michel and Stafford carried out research on staff in an American chain of 36 They discovered that activities designed for staff to have fun improved their 37 , and that management involvement led to lower staff 38 They also found that the activities needed to fit with both the company's 39 and the 40 of the staff. A balance was required between a degree of freedom and maintaining work standards.

WRITING

WRITING TASK 1

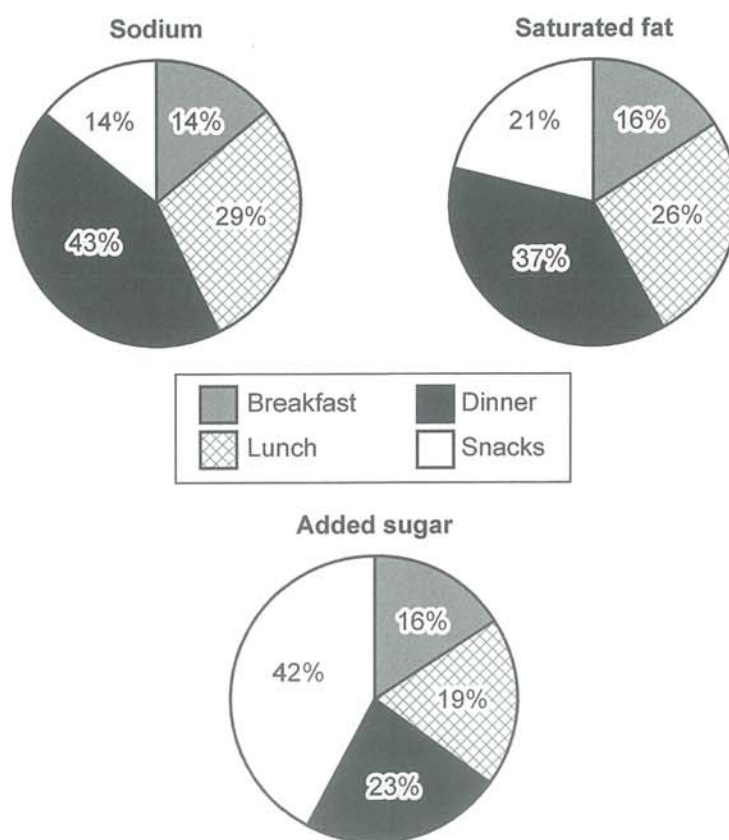
You should spend about 20 minutes on this task.

The charts below show the average percentages in typical meals of three types of nutrients, all of which may be unhealthy if eaten too much.

Summarise the information by selecting and reporting the main features, and make comparisons where relevant.

Write at least 150 words.

Average percentages of sodium, saturated fats and added sugars in typical meals consumed in the USA



Test 1

WRITING TASK 2

You should spend about 40 minutes on this task.

Write about the following topic:

Some people believe that it is best to accept a bad situation, such as an unsatisfactory job or shortage of money. Others argue that it is better to try and improve such situations.

Discuss both these views and give your own opinion.

Give reasons for your answer and include any relevant examples from your own knowledge or experience.

Write at least 250 words.

SPEAKING

PART 1

The examiner asks the candidate about him/herself, his/her home, work or studies and other familiar topics.

EXAMPLE

Future

- What job would you like to have ten years from now? [Why?]
- How useful will English be for your future? [Why/Why not?]
- How much travelling do you hope to do in the future? [Why/Why not?]
- How do you think your life will change in the future? [Why/Why not?]

PART 2

Describe a book that you enjoyed reading because you had to think a lot.

You should say:

what this book was

why you decided to read it

what reading this book made you think about

and explain why you enjoyed reading this book.

You will have to talk about the topic for one to two minutes. You have one minute to think about what you are going to say. You can make some notes to help you if you wish.

PART 3

*Discussion topics:***Children and reading**

Example questions:

What are the most popular types of children's books in your country?

What are the benefits of parents reading books to their children?

Should parents always let children choose the books they read?

Electronic books

Example questions:

How popular are electronic books in your country?

What are the advantages of parents reading electronic books (compared to printed books)?

Will electronic books ever completely replace printed books in the future?

Test 2

LISTENING

SECTION 1 Questions 1–10

Complete the notes below.

Write **ONE WORD AND/OR A NUMBER** for each answer.

TOTAL HEALTH CLINIC	
PATIENT DETAILS	
Personal information	
<i>Example</i>	
Name	Julie Anne <i>Garcia</i>
Contact phone	1
Date of birth	2 , 1992
Occupation	works as a 3
Insurance company	4 Life Insurance
Details of the problem	
Type of problem	pain in her left 5
When it began	6 ago
Action already taken	has taken painkillers and applied ice
Other information	
Sports played	belongs to a 7 club
	goes 8 regularly
Medical history	injured her 9 last year
	no allergies
	no regular medication apart from 10

SECTION 2 Questions 11–20**Questions 11–15**

Choose the correct letter, **A**, **B** or **C**.

Visit to Branley Castle

- 11 Before Queen Elizabeth I visited the castle in 1576,
- A repairs were carried out to the guest rooms.
 - B a new building was constructed for her.
 - C a fire damaged part of the main hall.
- 12 In 1982, the castle was sold to
- A the government.
 - B the Fenys family.
 - C an entertainment company.
- 13 In some of the rooms, visitors can
- A speak to experts on the history of the castle.
 - B interact with actors dressed as famous characters.
 - C see models of historical figures moving and talking.
- 14 In the castle park, visitors can
- A see an 800-year-old tree.
 - B go to an art exhibition.
 - C visit a small zoo.
- 15 At the end of the visit, the group will have
- A afternoon tea in the conservatory.
 - B the chance to meet the castle's owners.
 - C a photograph together on the Great Staircase.

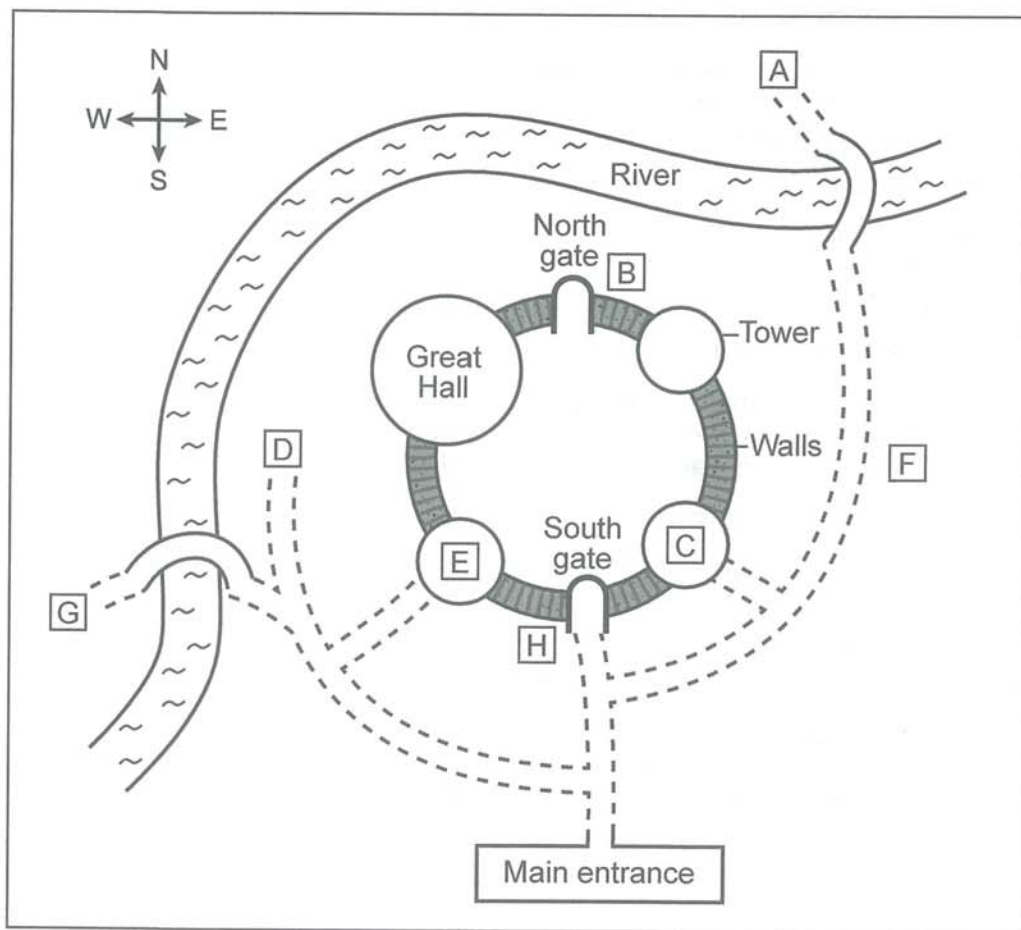
Test 2

Questions 16–20

Label the plan below.

Write the correct letter, **A–H**, next to Questions 16–20.

Branley Castle



- 16 Starting point for walking the walls
- 17 Bow and arrow display
- 18 Hunting birds display
- 19 Traditional dancing
- 20 Shop

SECTION 3 Questions 21–30*Questions 21–24*

Choose the correct letter, **A**, **B** or **C**.

Woolly mammoths on St Paul's Island

- 21 How will Rosie and Martin introduce their presentation?
- A with a drawing of woolly mammoths in their natural habitat
 - B with a timeline showing when woolly mammoths lived
 - C with a video clip about woolly mammoths
- 22 What was surprising about the mammoth tooth found by Russell Graham?
- A It was still embedded in the mammoth's jawbone.
 - B It was from an unknown species of mammoth.
 - C It was not as old as mammoth remains from elsewhere.
- 23 The students will use an animated diagram to demonstrate how the mammoths
- A became isolated on the island.
 - B spread from the island to other areas.
 - C coexisted with other animals on the island.
- 24 According to Martin, what is unusual about the date of the mammoths' extinction on the island?
- A how exact it is
 - B how early it is
 - C how it was established

Questions 25–30

What action will the students take for each of the following sections of their presentation?

Choose **SIX** answers from the box and write the correct letter, **A–H**, next to Questions 25–30.

Actions

- A** make it more interactive
- B** reduce visual input
- C** add personal opinions
- D** contact one of the researchers
- E** make detailed notes
- F** find information online
- G** check timing
- H** organise the content more clearly

Sections of presentation

- 25 Introduction
- 26 Discovery of the mammoth tooth
- 27 Initial questions asked by the researchers
- 28 Further research carried out on the island
- 29 Findings and possible explanations
- 30 Relevance to the present day

SECTION 4 Questions 31–40

Complete the notes below.

Write **ONE WORD ONLY** for each answer.

The history of weather forecasting

Ancient cultures

- many cultures believed that floods and other disasters were involved in the creation of the world
- many cultures invented **31** and other ceremonies to make the weather gods friendly
- people needed to observe and interpret the sky to ensure their **32**
- around 650 BC, Babylonians started forecasting, using weather phenomena such as **33**
- by 300 BC, the Chinese had a calendar made up of a number of **34** connected with the weather

Ancient Greeks

- a more scientific approach
- Aristotle tried to explain the formation of various weather phenomena
- Aristotle also described haloes and **35**

Middle Ages

- Aristotle's work considered accurate
- many proverbs, e.g. about the significance of the colour of the **36**, passed on accurate information.

15th–19th centuries

- 15th century: scientists recognised value of **37** for the first time
- Galileo invented the **38**
- Pascal showed relationship between atmospheric pressure and altitude
- from the 17th century, scientists could measure atmospheric pressure and temperature
- 18th century: Franklin identified the movement of **39**
- 19th century: data from different locations could be sent to the same place by **40**

READING

READING PASSAGE 1

You should spend about 20 minutes on **Questions 1–13**, which are based on Reading Passage 1 below.

Alexander Henderson (1831–1913)

Born in Scotland, Henderson emigrated to Canada in 1855 and became a well-known landscape photographer

Alexander Henderson was born in Scotland in 1831 and was the son of a successful merchant. His grandfather, also called Alexander, had founded the family business, and later became the first chairman of the National Bank of Scotland. The family had extensive landholdings in Scotland. Besides its residence in Edinburgh, it owned Press Estate, 650 acres of farmland about 35 miles southeast of the city. The family often stayed at Press Castle, the large mansion on the northern edge of the property, and Alexander spent much of his childhood in the area, playing on the beach near Eyemouth or fishing in the streams nearby.

Even after he went to school at Murcheston Academy on the outskirts of Edinburgh, Henderson returned to Press at weekends. In 1849 he began a three-year apprenticeship to become an accountant. Although he never liked the prospect of a business career, he stayed with it to please his family. In October 1855, however, he emigrated to Canada with his wife Agnes Elder Robertson and they settled in Montreal.

Henderson learned photography in Montreal around the year 1857 and quickly took it up as a serious amateur. He became a personal friend and colleague of the Scottish–Canadian photographer William Notman. The two men made a photographic excursion to Niagara Falls in 1860 and they cooperated on experiments with magnesium flares as a source of artificial light in 1865. They belonged to the same societies and were among the founding members of the Art Association of Montreal. Henderson acted as chairman of the association's first meeting, which was held in Notman's studio on 11 January 1860.

In spite of their friendship, their styles of photography were quite different. While Notman's landscapes were noted for their bold realism, Henderson for the first 20 years of his career produced romantic images, showing the strong influence of the British landscape tradition. His artistic and technical progress was rapid and in 1865 he published his first major collection of landscape photographs. The publication had limited circulation (only seven copies have ever been found), and was called *Canadian Views and Studies*. The contents of each copy vary significantly and have proved a useful source for evaluating Henderson's early work.

This text is taken, for the most part, verbatim from the *Dictionary of Canadian Biography* Volume XIV (1911–1920). For design purposes, quotation marks have been omitted. Source: http://www.biographi.ca/en/bio/henderson_alexander_1831_1913_14E.html. Reproduced with permission.

In 1866, he gave up his business to open a photographic studio, advertising himself as a portrait and landscape photographer. From about 1870 he dropped portraiture to specialize in landscape photography and other views. His numerous photographs of city life revealed in street scenes, houses, and markets are alive with human activity, and although his favourite subject was landscape he usually composed his scenes around such human pursuits as farming the land, cutting ice on a river, or sailing down a woodland stream. There was sufficient demand for these types of scenes and others he took depicting the lumber trade, steamboats and waterfalls to enable him to make a living. There was little competing hobby or amateur photography before the late 1880s because of the time-consuming techniques involved and the weight of the equipment. People wanted to buy photographs as souvenirs of a trip or as gifts, and catering to this market, Henderson had stock photographs on display at his studio for mounting, framing, or inclusion in albums.

Henderson frequently exhibited his photographs in Montreal and abroad, in London, Edinburgh, Dublin, Paris, New York, and Philadelphia. He met with greater success in 1877 and 1878 in New York when he won first prizes in the exhibition held by E and H T Anthony and Company for landscapes using the Lambertype process. In 1878 his work won second prize at the world exhibition in Paris.

In the 1870s and 1880s Henderson travelled widely throughout Quebec and Ontario, in Canada, documenting the major cities of the two provinces and many of the villages in Quebec. He was especially fond of the wilderness and often travelled by canoe on the Blanche, du Lièvre, and other noted eastern rivers. He went on several occasions to the Maritimes and in 1872 he sailed by yacht along the lower north shore of the St Lawrence River. That same year, while in the lower St Lawrence River region, he took some photographs of the construction of the Intercolonial Railway. This undertaking led in 1875 to a commission from the railway to record the principal structures along the almost-completed line connecting Montreal to Halifax. Commissions from other railways followed. In 1876 he photographed bridges on the Quebec, Montreal, Ottawa and Occidental Railway between Montreal and Ottawa. In 1885 he went west along the Canadian Pacific Railway (CPR) as far as Rogers Pass in British Columbia, where he took photographs of the mountains and the progress of construction.

In 1892 Henderson accepted a full-time position with the CPR as manager of a photographic department which he was to set up and administer. His duties included spending four months in the field each year. That summer he made his second trip west, photographing extensively along the railway line as far as Victoria. He continued in this post until 1897, when he retired completely from photography.

When Henderson died in 1913, his huge collection of glass negatives was stored in the basement of his house. Today collections of his work are held at the National Archives of Canada, Ottawa, and the McCord Museum of Canadian History, Montreal.

This text is taken, for the most part, verbatim from the *Dictionary of Canadian Biography* Volume XIV (1911–1920). For design purposes, quotation marks have been omitted. Source: http://www.biographi.ca/en/bio/henderson_alexander_1831_1913_14E.html. Reproduced with permission.

Test 2

Questions 1–8

Do the following statements agree with the information given in Reading Passage 1?

In boxes 1–8 on your answer sheet, write

TRUE	<i>if the statement agrees with the information</i>
FALSE	<i>if the statement contradicts the information</i>
NOT GIVEN	<i>if there is no information on this</i>

- 1 Henderson rarely visited the area around Press estate when he was younger.
- 2 Henderson pursued a business career because it was what his family wanted.
- 3 Henderson and Notman were surprised by the results of their 1865 experiment.
- 4 There were many similarities between Henderson's early landscapes and those of Notman.
- 5 The studio that Henderson opened in 1866 was close to his home.
- 6 Henderson gave up portraiture so that he could focus on taking photographs of scenery.
- 7 When Henderson began work for the Intercolonial Railway, the Montreal to Halifax line had been finished.
- 8 Henderson's last work as a photographer was with the Canadian Pacific Railway.

Questions 9–13

Complete the notes below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 9–13 on your answer sheet.

Alexander Henderson

Early life

- was born in Scotland in 1831 – father was a 9
- trained as an accountant, emigrated to Canada in 1855

Start of a photographic career

- opened up a photographic studio in 1866
- took photos of city life, but preferred landscape photography
- people bought Henderson's photos because photography took up considerable time and the 10 was heavy
- the photographs Henderson sold were 11 or souvenirs

Travelling as a professional photographer

- travelled widely in Quebec and Ontario in 1870s and 1880s
- took many trips along eastern rivers in a 12
- worked for Canadian railways between 1875 and 1897
- worked for CPR in 1885 and photographed the 13 and the railway at Rogers Pass

READING PASSAGE 2

You should spend about 20 minutes on **Questions 14–26**, which are based on Reading Passage 2 below.

Back to the future of skyscraper design

Answers to the problem of excessive electricity use by skyscrapers and large public buildings can be found in ingenious but forgotten architectural designs of the 19th and early-20th centuries

- A** *The Recovery of Natural Environments in Architecture* by Professor Alan Short is the culmination of 30 years of research and award-winning green building design by Short and colleagues in Architecture, Engineering, Applied Maths and Earth Sciences at the University of Cambridge.

'The crisis in building design is already here,' said Short. 'Policy makers think you can solve energy and building problems with gadgets. You can't. As global temperatures continue to rise, we are going to squander more and more energy on keeping our buildings mechanically cool until we have run out of capacity.'

- B** Short is calling for a sweeping reinvention of how skyscrapers and major public buildings are designed – to end the reliance on sealed buildings which exist solely via the 'life support' system of vast air conditioning units.

Instead, he shows it is entirely possible to accommodate natural ventilation and cooling in large buildings by looking into the past, before the widespread introduction of air conditioning systems, which were 'relentlessly and aggressively marketed' by their inventors.

- C** Short points out that to make most contemporary buildings habitable, they have to be sealed and air conditioned. The energy use and carbon emissions this generates is spectacular and largely unnecessary. Buildings in the West account for 40–50% of electricity usage, generating substantial carbon emissions, and the rest of the world is catching up at a frightening rate. Short regards glass, steel and air-conditioned skyscrapers as symbols of status, rather than practical ways of meeting our requirements.

- D** Short's book highlights a developing and sophisticated art and science of ventilating buildings through the 19th and earlier-20th centuries, including the design of ingeniously ventilated hospitals. Of particular interest were those built to the designs of John Shaw Billings, including the first Johns Hopkins Hospital in the US city of Baltimore (1873–1889).

'We spent three years digitally modelling Billings' final designs,' says Short. 'We put pathogens* in the airstreams, modelled for someone with tuberculosis (TB) coughing in the wards and we found the ventilation systems in the room would have kept other patients safe from harm.'

* pathogens: microorganisms that can cause disease

- E** 'We discovered that 19th-century hospital wards could generate up to 24 air changes an hour – that's similar to the performance of a modern-day, computer-controlled operating theatre. We believe you could build wards based on these principles now.'

Single rooms are not appropriate for all patients. Communal wards appropriate for certain patients – older people with dementia, for example – would work just as well in today's hospitals, at a fraction of the energy cost.'

Professor Short contends the mindset and skill-sets behind these designs have been completely lost, lamenting the disappearance of expertly designed theatres, opera houses, and other buildings where up to half the volume of the building was given over to ensuring everyone got fresh air.

- F** Much of the ingenuity present in 19th-century hospital and building design was driven by a panicked public clamouring for buildings that could protect against what was thought to be the lethal threat of miasmas – toxic air that spread disease. Miasmas were feared as the principal agents of disease and epidemics for centuries, and were used to explain the spread of infection from the Middle Ages right through to the cholera outbreaks in London and Paris during the 1850s. Foul air, rather than germs, was believed to be the main driver of 'hospital fever', leading to disease and frequent death. The prosperous steered clear of hospitals.

While miasma theory has been long since disproved, Short has for the last 30 years advocated a return to some of the building design principles produced in its wake.

- G** Today, huge amounts of a building's space and construction cost are given over to air conditioning. 'But I have designed and built a series of buildings over the past three decades which have tried to reinvent some of these ideas and then measure what happens.'

'To go forward into our new low-energy, low-carbon future, we would be well advised to look back at design before our high-energy, high-carbon present appeared. What is surprising is what a rich legacy we have abandoned.'

- H** Successful examples of Short's approach include the Queen's Building at De Montfort University in Leicester. Containing as many as 2,000 staff and students, the entire building is naturally ventilated, passively cooled and naturally lit, including the two largest auditoria, each seating more than 150 people. The award-winning building uses a fraction of the electricity of comparable buildings in the UK.

Short contends that glass skyscrapers in London and around the world will become a liability over the next 20 or 30 years if climate modelling predictions and energy price rises come to pass as expected.

- I** He is convinced that sufficiently cooled skyscrapers using the natural environment can be produced in almost any climate. He and his team have worked on hybrid buildings in the harsh climates of Beijing and Chicago – built with natural ventilation assisted by back-up air conditioning – which, surprisingly perhaps, can be switched off more than half the time on milder days and during the spring and autumn.

Short looks at how we might reimagine the cities, offices and homes of the future. Maybe it's time we changed our outlook.

Test 2

Questions 14–18

Reading Passage 2 has nine sections, **A–I**.

Which section contains the following information?

*Write the correct letter, **A–I**, in boxes 14–18 on your answer sheet.*

- 14 why some people avoided hospitals in the 19th century
- 15 a suggestion that the popularity of tall buildings is linked to prestige
- 16 a comparison between the circulation of air in a 19th-century building and modern standards
- 17 how Short tested the circulation of air in a 19th-century building
- 18 an implication that advertising led to the large increase in the use of air conditioning

Questions 19–26

Complete the summary below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 19–26 on your answer sheet.

Ventilation in 19th-century hospital wards

Professor Alan Short examined the work of John Shaw Billings, who influenced the architectural **19** of hospitals to ensure they had good ventilation. He calculated that **20** in the air coming from patients suffering from **21** would not have harmed other patients. He also found that the air in **22** in hospitals could change as often as in a modern operating theatre. He suggests that energy use could be reduced by locating more patients in **23** areas.

A major reason for improving ventilation in 19th-century hospitals was the demand from the **24** for protection against bad air, known as **25** These were blamed for the spread of disease for hundreds of years, including epidemics of **26** in London and Paris in the middle of the 19th century.

Test 2

READING PASSAGE 3

You should spend about 20 minutes on **Questions 27–40**, which are based on Reading Passage 3 on pages 47 and 48.

Questions 27–34

Reading Passage 3 has eight sections, **A–H**.

Choose the correct heading for each section from the list of headings below.

Write the correct number, **i–ix**, in boxes 27–34 on your answer sheet.

List of Headings

- i** Complaints about the impact of a certain approach
- ii** Fundamental beliefs that are in fact incorrect
- iii** Early recommendations concerning business activities
- iv** Organisations that put a new approach into practice
- v** Companies that have suffered from changing their approach
- vi** What people are increasingly expected to do
- vii** How to achieve outcomes that are currently impossible
- viii** Neither approach guarantees continuous improvement
- ix** Evidence that a certain approach can have more disadvantages than advantages

- 27 Section A
- 28 Section B
- 29 Section C
- 30 Section D
- 31 Section E
- 32 Section F
- 33 Section G
- 34 Section H

Why companies should welcome disorder

- A** Organisation is big business. Whether it is of our lives – all those inboxes and calendars – or how companies are structured, a multi-billion dollar industry helps to meet this need.

We have more strategies for time management, project management and self-organisation than at any other time in human history. We are told that we ought to organise our company, our home life, our week, our day and even our sleep, all as a means to becoming more productive. Every week, countless seminars and workshops take place around the world to tell a paying public that they ought to structure their lives in order to achieve this.

This rhetoric has also crept into the thinking of business leaders and entrepreneurs, much to the delight of self-proclaimed perfectionists with the need to get everything right. The number of business schools and graduates has massively increased over the past 50 years, essentially teaching people how to organise well.

- B** Ironically, however, the number of businesses that fail has also steadily increased. Work-related stress has increased. A large proportion of workers from all demographics claim to be dissatisfied with the way their work is structured and the way they are managed.

This begs the question: what has gone wrong? Why is it that on paper the drive for organisation seems a sure shot for increasing productivity, but in reality falls well short of what is expected?

- C** This has been a problem for a while now. Frederick Taylor was one of the forefathers of scientific management. Writing in the first half of the 20th century, he designed a number of principles to improve the efficiency of the work process, which have since become widespread in modern companies. So the approach has been around for a while.

- D** New research suggests that this obsession with efficiency is misguided. The problem is not necessarily the management theories or strategies we use to organise our work; it's the basic assumptions we hold in approaching how we work. Here it's the assumption that order is a necessary condition for productivity. This assumption has also fostered the idea that disorder must be detrimental to organisational productivity. The result is that businesses and people spend time and money organising themselves for the sake of organising, rather than actually looking at the end goal and usefulness of such an effort.

- E** What's more, recent studies show that order actually has diminishing returns. Order does increase productivity to a certain extent, but eventually the usefulness of the process of organisation, and the benefit it yields, reduce until the point where any further increase in order reduces productivity. Some argue that in a business, if the cost of formally structuring something outweighs the benefit of doing it, then that thing ought not to be formally structured. Instead, the resources involved can be better used elsewhere.

Test 2

- F** In fact, research shows that, when innovating, the best approach is to create an environment devoid of structure and hierarchy and enable everyone involved to engage as one organic group. These environments can lead to new solutions that, under conventionally structured environments (filled with bottlenecks in terms of information flow, power structures, rules, and routines) would never be reached.
- G** In recent times companies have slowly started to embrace this disorganisation. Many of them embrace it in terms of perception (embracing the idea of disorder, as opposed to fearing it) and in terms of process (putting mechanisms in place to reduce structure).

For example, Oticon, a large Danish manufacturer of hearing aids, used what it called a 'spaghetti' structure in order to reduce the organisation's rigid hierarchies. This involved scrapping formal job titles and giving staff huge amounts of ownership over their own time and projects. This approach proved to be highly successful initially, with clear improvements in worker productivity in all facets of the business.

In similar fashion, the former chairman of General Electric embraced disorganisation, putting forward the idea of the 'boundaryless' organisation. Again, it involves breaking down the barriers between different parts of a company and encouraging virtual collaboration and flexible working. Google and a number of other tech companies have embraced (at least in part) these kinds of flexible structures, facilitated by technology and strong company values which glue people together.

- H** A word of warning to others thinking of jumping on this bandwagon: the evidence so far suggests disorder, much like order, also seems to have diminishing utility, and can also have detrimental effects on performance if overused. Like order, disorder should be embraced only so far as it is useful. But we should not fear it – nor venerate one over the other. This research also shows that we should continually question whether or not our existing assumptions work.

Questions 35–37

Complete the sentences below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 35–37 on your answer sheet.

- 35 Numerous training sessions are aimed at people who feel they are not enough.
- 36 Being organised appeals to people who regard themselves as
- 37 Many people feel with aspects of their work.

Questions 38–40

Do the following statements agree with the information given in Reading Passage 3?

In boxes 38–40 on your answer sheet, write

TRUE if the statement agrees with the information
FALSE if the statement contradicts the information
NOT GIVEN if there is no information on this

- 38 Both businesses and people aim at order without really considering its value.
- 39 Innovation is most successful if the people involved have distinct roles.
- 40 Google was inspired to adopt flexibility by the success of General Electric.

WRITING

WRITING TASK 1

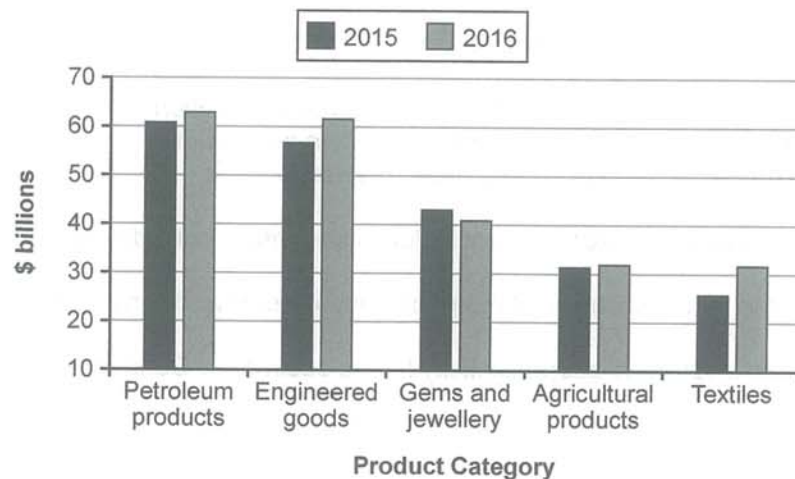
You should spend about 20 minutes on this task.

The chart below shows the value of one country's exports in various categories during 2015 and 2016. The table shows the percentage change in each category of exports in 2016 compared with 2015.

Summarise the information by selecting and reporting the main features, and make comparisons where relevant.

Write at least 150 words.

Export Earnings (2015–2016)



Percentage change in values (2015–2016)	
Petroleum products	↑ 3%
Engineered goods	↑ 8.5%
Gems and jewellery	↓ 5.18%
Agricultural products	↑ 0.81%
Textiles	↑ 15.24%

WRITING TASK 2

You should spend about 40 minutes on this task.

Write about the following topic:

Some people say that the main environmental problem of our time is the loss of particular species of plants and animals. Others say that there are more important environmental problems.

Discuss both these views and give your own opinion.

Give reasons for your answer and include any relevant examples from your own knowledge or experience.

Write at least 250 words.

SPEAKING

PART 1

The examiner asks the candidate about him/herself, his/her home, work or studies and other familiar topics.

EXAMPLE

Social media

- Which social media websites do you use?
- How much time do you spend on social media sites? [Why/Why not?]
- What kind of information about yourself have you put on social media? [Why/Why not?]
- Is there anything you don't like about social media? [Why?]

PART 2

Describe something you liked very much which you bought for your home.

You should say:

what you bought

when and where you bought it

why you chose this particular thing

and explain why you liked it so much.

You will have to talk about the topic for one to two minutes. You have one minute to think about what you are going to say. You can make some notes to help you if you wish.

PART 3

Discussion topics:

Creating a nice home

Example questions:

Why do some people buy lots of things for their home?

Do you think it is very expensive to make a home look nice?

Why don't some people care about how their home looks?

Different types of home

Example questions:

In what ways is living in a flat/apartment better than living in a house?

Do you think homes will look different in the future?

Do you agree that the kinds of homes people prefer change as they get older?

Test 3

LISTENING

SECTION 1 Questions 1–10

Complete the notes below.

Write **ONE WORD AND/OR A NUMBER** for each answer.

Flanders Conference Hotel
<i>Example</i> Customer Services Manager: <i>Angela</i>
Date available weekend beginning February 4th
Conference facilities - the 1 room for talks (projector and 2 available) - area for coffee and an 3 - free 4 throughout - a standard buffet lunch costs 5 \$ per head
Accommodation Rooms will cost 6 \$ including breakfast.
Other facilities - The hotel also has a spa and rooftop 7 - There's a free shuttle service to the 8
Location - Wilby Street (quite near the 9) - near to restaurants and many 10

Test 3

SECTION 2 Questions 11–20

Questions 11 and 12

Choose **TWO** letters, **A–E**.

Which **TWO** activities that volunteers do are mentioned?

- A** decorating
- B** cleaning
- C** delivering meals
- D** shopping
- E** childcare

Questions 13 and 14

Choose **TWO** letters, **A–E**.

Which **TWO** ways that volunteers can benefit from volunteering are mentioned?

- A** learning how to be part of a team
- B** having a sense of purpose
- C** realising how lucky they are
- D** improved ability at time management
- E** boosting their employment prospects

Questions 15–20

What has each of the following volunteers helped someone to do?

Choose **SIX** answers from the box and write the correct letter, **A–G**, next to Questions 15–20.

What volunteers have helped people to do

- A** overcome physical difficulties
- B** rediscover skills not used for a long time
- C** improve their communication skills
- D** solve problems independently
- E** escape isolation
- F** remember past times
- G** start a new hobby

Volunteers

- 15** Habib
- 16** Consuela
- 17** Minh
- 18** Tanya
- 19** Alexei
- 20** Juba

Test 3

SECTION 3 Questions 21–26

Complete the notes below.

Write **ONE WORD AND/OR A NUMBER** for each answer.

Background on school marching band

It consists of around **21** students.

It is due to play in a **22** band competition.

It has been invited to play in the town's **23**

They have listened to a talk by a **24**

Joe will discuss a **25** with the band.

Joe hopes the band will attend a **26** next month.

Questions 27–30

What problem does Joe mention in connection with each of the following band members?

Choose **FOUR** answers from the box and write the correct letter, **A–F**, next to Questions 27–30.

Problems

- A** makes a lot of mistakes in rehearsals
- B** keeps making unhelpful suggestions
- C** has difficulty with rhythm
- D** misses too many rehearsals
- E** has a health problem
- F** doesn't mix with other students

Band members

- 27** flautist
- 28** trumpeter
- 29** trombonist
- 30** percussionist

Test 3

SECTION 4 Questions 31–40

Complete the notes below.

Write **ONE WORD AND/OR A NUMBER** for each answer.

Concerts in university arts festival

Concert 1

- Australian composer: Liza Lim
- studied piano and **31** before turning to composition
- performers and festivals around the world have given her a lot of commissions
- compositions show a great deal of **32** and are drawn from various cultural sources
- her music is very expressive and also **33**
- festival will include her **34** called *The Oresteia*
- Lim described the sounds in *The Oresteia* as **35**
- British composers: Ralph Vaughan Williams, Frederick Delius

Concert 2

- British composers: Benjamin Britten, Judith Weir
- Australian composer: Ross Edwards
- festival will include *The Tower of Remoteness*, inspired by nature
- *The Tower of Remoteness* is performed by piano and **36**
- compositions include music for children
- celebrates Australia's cultural **37**

Concert 3

- Australian composer: Carl Vine
- played cornet then piano
- studied **38** before studying music
- worked in Sydney as a pianist and composer
- became well known as composer of music for **39**
- festival will include his music for the 1996 **40**
- British composers: Edward Elgar, Thomas Adès

You should spend about 20 minutes on **Questions 1–13**, which are based on Reading Passage 1 below.

The concept of intelligence

A Looked at in one way, everyone knows what intelligence is; looked at in another way, no one does. In other words, people all have unconscious notions – known as ‘implicit theories’ – of intelligence, but no one knows for certain what it actually is. This chapter addresses how people conceptualize intelligence, whatever it may actually be.

But why should we even care what people think intelligence is, as opposed only to valuing whatever it actually is? There are at least four reasons people's conceptions of intelligence matter.

- B** First, implicit theories of intelligence drive the way in which people perceive and evaluate their own intelligence and that of others. To better understand the judgments people make about their own and others' abilities, it is useful to learn about people's implicit theories. For example, parents' implicit theories of their children's language development will determine at what ages they will be willing to make various corrections in their children's speech. More generally, parents' implicit theories of intelligence will determine at what ages they believe their children are ready to perform various cognitive tasks. Job interviewers will make hiring decisions on the basis of their implicit theories of intelligence. People will decide who to be friends with on the basis of such theories. In sum, knowledge about implicit theories of intelligence is important because this knowledge is so often used by people to make judgments in the course of their everyday lives.
- C** Second, the implicit theories of scientific investigators ultimately give rise to their explicit theories. Thus it is useful to find out what these implicit theories are. Implicit theories provide a framework that is useful in defining the general scope of a phenomenon – especially a not-well-understood phenomenon. These implicit theories can suggest what aspects of the phenomenon have been more or less attended to in previous investigations.
- D** Third, implicit theories can be useful when an investigator suspects that existing explicit theories are wrong or misleading. If an investigation of implicit theories reveals little correspondence between the extant implicit and explicit theories, the implicit theories may be wrong. But the possibility also needs to be taken into account that the explicit theories are wrong and in need of correction or supplementation. For example, some implicit theories of intelligence suggest the need for expansion of some of our explicit theories of the construct.

Test 3

- E** Finally, understanding implicit theories of intelligence can help elucidate developmental and cross-cultural differences. As mentioned earlier, people have expectations for intellectual performances that differ for children of different ages. How these expectations differ is in part a function of culture. For example, expectations for children who participate in Western-style schooling are almost certain to be different from those for children who do not participate in such schooling.
- F** I have suggested that there are three major implicit theories of how intelligence relates to society as a whole (Sternberg, 1997). These might be called Hamiltonian, Jeffersonian, and Jacksonian. These views are not based strictly, but rather, loosely, on the philosophies of Alexander Hamilton, Thomas Jefferson, and Andrew Jackson, three great statesmen in the history of the United States.
- G** The Hamiltonian view, which is similar to the Platonic view, is that people are born with different levels of intelligence and that those who are less intelligent need the good offices of the more intelligent to keep them in line, whether they are called government officials or, in Plato's term, philosopher-kings. Herrnstein and Murray (1994) seem to have shared this belief when they wrote about the emergence of a cognitive (high-IQ) elite, which eventually would have to take responsibility for the largely irresponsible masses of non-elite (low-IQ) people who cannot take care of themselves. Left to themselves, the unintelligent would create, as they always have created, a kind of chaos.
- H** The Jeffersonian view is that people should have equal opportunities, but they do not necessarily avail themselves equally of these opportunities and are not necessarily equally rewarded for their accomplishments. People are rewarded for what they accomplish, if given equal opportunity. Low achievers are not rewarded to the same extent as high achievers. In the Jeffersonian view, the goal of education is not to favor or foster an elite, as in the Hamiltonian tradition, but rather to allow children the opportunities to make full use of the skills they have. My own views are similar to these (Sternberg, 1997).
- I** The Jacksonian view is that all people are equal, not only as human beings but in terms of their competencies – that one person would serve as well as another in government or on a jury or in almost any position of responsibility. In this view of democracy, people are essentially intersubstitutable except for specialized skills, all of which can be learned. In this view, we do not need or want any institutions that might lead to favoring one group over another.
- J** Implicit theories of intelligence and of the relationship of intelligence to society perhaps need to be considered more carefully than they have been because they often serve as underlying presuppositions for explicit theories and even experimental designs that are then taken as scientific contributions. Until scholars are able to discuss their implicit theories and thus their assumptions, they are likely to miss the point of what others are saying when discussing their explicit theories and their data.

Questions 1–3

Reading Passage 1 has ten sections, **A–J**.

Which section contains the following information?

*Write the correct letter, **A–J**, in boxes 1–3 on your answer sheet.*

- 1 information about how non-scientists' assumptions about intelligence influence their behaviour towards others
- 2 a reference to lack of clarity over the definition of intelligence
- 3 the point that a researcher's implicit and explicit theories may be very different

Questions 4–6

Do the following statements agree with the claims of the writer in Reading Passage 1?

In boxes 4–6 on your answer sheet, write

YES if the statement agrees with the claims of the writer
NO if the statement contradicts the claims of the writer
NOT GIVEN if it is impossible to say what the writer thinks about this

- 4 Slow language development in children is likely to prove disappointing to their parents.
- 5 People's expectations of what children should gain from education are universal.
- 6 Scholars may discuss theories without fully understanding each other.

Test 3

Questions 7–13

Look at the following statements (Questions 7–13) and the list of theories below.

Match each statement with the correct theory, **A**, **B**, or **C**.

Write the correct letter, **A**, **B**, or **C**, in boxes 7–13 on your answer sheet.

NB You may use any letter more than once.

- 7 It is desirable for the same possibilities to be open to everyone.
- 8 No section of society should have preferential treatment at the expense of another.
- 9 People should only gain benefits on the basis of what they actually achieve.
- 10 Variation in intelligence begins at birth.
- 11 The more intelligent people should be in positions of power.
- 12 Everyone can develop the same abilities.
- 13 People of low intelligence are likely to lead uncontrolled lives.

List of Theories

- A** Hamiltonian
- B** Jeffersonian
- C** Jacksonian

READING PASSAGE 2

You should spend about 20 minutes on **Questions 14–26**, which are based on Reading Passage 2 below.

Saving bugs to find new drugs

Zoologist Ross Piper looks at the potential of insects in pharmaceutical research

- A** More drugs than you might think are derived from, or inspired by, compounds found in living things. Looking to nature for the soothing and curing of our ailments is nothing new – we have been doing it for tens of thousands of years. You only have to look at other primates – such as the capuchin monkeys who rub themselves with toxin-oozing millipedes to deter mosquitoes, or the chimpanzees who use noxious forest plants to rid themselves of intestinal parasites – to realise that our ancient ancestors too probably had a basic grasp of medicine.
- B** Pharmaceutical science and chemistry built on these ancient foundations and perfected the extraction, characterisation, modification and testing of these natural products. Then, for a while, modern pharmaceutical science moved its focus away from nature and into the laboratory, designing chemical compounds from scratch. The main cause of this shift is that although there are plenty of promising chemical compounds in nature, finding them is far from easy. Securing sufficient numbers of the organism in question, isolating and characterising the compounds of interest, and producing large quantities of these compounds are all significant hurdles.
- C** Laboratory-based drug discovery has achieved varying levels of success, something which has now prompted the development of new approaches focusing once again on natural products. With the ability to mine genomes for useful compounds, it is now evident that we have barely scratched the surface of nature's molecular diversity. This realisation, together with several looming health crises, such as antibiotic resistance, has put bioprospecting – the search for useful compounds in nature – firmly back on the map.
- D** Insects are the undisputed masters of the terrestrial domain, where they occupy every possible niche. Consequently, they have a bewildering array of interactions with other organisms, something which has driven the evolution of an enormous range of very interesting compounds for defensive and offensive purposes. Their remarkable diversity exceeds that of every other group of animals on the planet combined. Yet even though insects are far and away the most diverse animals in existence, their potential as sources of therapeutic compounds is yet to be realised.

Test 3

- E From the tiny proportion of insects that have been investigated, several promising compounds have been identified. For example, alloferon, an antimicrobial compound produced by blow fly larvae, is used as an antiviral and antitumor agent in South Korea and Russia. The larvae of a few other insect species are being investigated for the potent antimicrobial compounds they produce. Meanwhile, a compound from the venom of the wasp *Polybia paulista* has potential in cancer treatment.
- F Why is it that insects have received relatively little attention in bioprospecting? Firstly, there are so many insects that, without some manner of targeted approach, investigating this huge variety of species is a daunting task. Secondly, insects are generally very small, and the glands inside them that secrete potentially useful compounds are smaller still. This can make it difficult to obtain sufficient quantities of the compound for subsequent testing. Thirdly, although we consider insects to be everywhere, the reality of this ubiquity is vast numbers of a few extremely common species. Many insect species are infrequently encountered and very difficult to rear in captivity, which, again, can leave us with insufficient material to work with.
- G My colleagues and I at Aberystwyth University in the UK have developed an approach in which we use our knowledge of ecology as a guide to target our efforts. The creatures that particularly interest us are the many insects that secrete powerful poison for subduing prey and keeping it fresh for future consumption. There are even more insects that are masters of exploiting filthy habitats, such as faeces and carcasses, where they are regularly challenged by thousands of micro-organisms. These insects have many antimicrobial compounds for dealing with pathogenic bacteria and fungi, suggesting that there is certainly potential to find many compounds that can serve as or inspire new antibiotics.
- H Although natural history knowledge points us in the right direction, it doesn't solve the problems associated with obtaining useful compounds from insects. Fortunately, it is now possible to snip out the stretches of the insect's DNA that carry the codes for the interesting compounds and insert them into cell lines that allow larger quantities to be produced. And although the road from isolating and characterising compounds with desirable qualities to developing a commercial product is very long and full of pitfalls, the variety of successful animal-derived pharmaceuticals on the market demonstrates there is a precedent here that is worth exploring.
- I With every bit of wilderness that disappears, we deprive ourselves of potential medicines. As much as I'd love to help develop a groundbreaking insect-derived medicine, my main motivation for looking at insects in this way is conservation. I sincerely believe that all species, however small and seemingly insignificant, have a right to exist for their own sake. If we can shine a light on the darker recesses of nature's medicine cabinet, exploring the useful chemistry of the most diverse animals on the planet, I believe we can make people think differently about the value of nature.

Questions 14–20

Reading Passage 2 has nine paragraphs, **A–I**.

Which paragraph contains the following information?

Write the correct letter, **A–I**, in boxes 14–20 on your answer sheet.

- 14 mention of factors driving a renewed interest in natural medicinal compounds
- 15 how recent technological advances have made insect research easier
- 16 examples of animals which use medicinal substances from nature
- 17 reasons why it is challenging to use insects in drug research
- 18 reference to how interest in drug research may benefit wildlife
- 19 a reason why nature-based medicines fell out of favour for a period
- 20 an example of an insect-derived medicine in use at the moment

Questions 21 and 22

Choose **TWO** letters, **A–E**.

Write the correct letters in boxes 21 and 22 on your answer sheet.

Which **TWO** of the following make insects interesting for drug research?

- A** the huge number of individual insects in the world
- B** the variety of substances insects have developed to protect themselves
- C** the potential to extract and make use of insects' genetic codes
- D** the similarities between different species of insect
- E** the manageable size of most insects

Test 3

Questions 23–26

Complete the summary below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 23–26 on your answer sheet.

Research at Aberystwyth University

Ross Piper and fellow zoologists at Aberystwyth University are using their expertise in **23** when undertaking bioprospecting with insects. They are especially interested in the compounds that insects produce to overpower and preserve their **24** They are also interested in compounds which insects use to protect themselves from pathogenic bacteria and fungi found in their **25** Piper hopes that these substances will be useful in the development of drugs such as **26**

READING PASSAGE 3

You should spend about 20 minutes on **Questions 27–40**, which are based on Reading Passage 3 below.

The power of play

Virtually every child, the world over, plays. The drive to play is so intense that children will do so in any circumstances, for instance when they have no real toys, or when parents do not actively encourage the behavior. In the eyes of a young child, running, pretending, and building are fun. Researchers and educators know that these playful activities benefit the development of the whole child across social, cognitive, physical, and emotional domains. Indeed, play is such an instrumental component to healthy child development that the United Nations High Commission on Human Rights (1989) recognized play as a fundamental right of every child.

Yet, while experts continue to expound a powerful argument for the importance of play in children's lives, the actual time children spend playing continues to decrease. Today, children play eight hours less each week than their counterparts did two decades ago (Elkind 2008). Under pressure of rising academic standards, play is being replaced by test preparation in kindergartens and grade schools, and parents who aim to give their preschoolers a leg up are led to believe that flashcards and educational 'toys' are the path to success. Our society has created a false dichotomy between play and learning.

Through play, children learn to regulate their behavior, lay the foundations for later learning in science and mathematics, figure out the complex negotiations of social relationships, build a repertoire of creative problem-solving skills, and so much more. There is also an important role for adults in guiding children through playful learning opportunities.

Full consensus on a formal definition of play continues to elude the researchers and theorists who study it. Definitions range from discrete descriptions of various types of play such as physical, construction, language, or symbolic play (Miller & Almon 2009), to lists of broad criteria, based on observations and attitudes, that are meant to capture the essence of all play behaviors (e.g. Rubin et al. 1983).

A majority of the contemporary definitions of play focus on several key criteria. The founder of the National Institute for Play, Stuart Brown, has described play as 'anything that spontaneously is done for its own sake'. More specifically, he says it 'appears purposeless, produces pleasure and joy, [and] leads one to the next stage of mastery' (as quoted in Tippet 2008). Similarly, Miller and Almon (2009) say that play includes 'activities that are freely chosen and directed by children and arise from intrinsic motivation'. Often, play is defined along a continuum as more or less playful using the following set of behavioral and dispositional criteria (e.g. Rubin et al. 1983):

Play is pleasurable: Children must enjoy the activity or it is not play. It is intrinsically motivated: Children engage in play simply for the satisfaction the behavior itself brings. It has no extrinsically motivated function or goal. Play is process oriented: When children

Test 3

play, the means are more important than the ends. It is freely chosen, spontaneous and voluntary. If a child is pressured, they will likely not think of the activity as play. Play is actively engaged: Players must be physically and/or mentally involved in the activity. Play is non-literal. It involves make-believe.

According to this view, children's playful behaviors can range in degree from 0% to 100% playful. Rubin and colleagues did not assign greater weight to any one dimension in determining playfulness; however, other researchers have suggested that process orientation and a lack of obvious functional purpose may be the most important aspects of play (e.g. Pellegrini 2009).

From the perspective of a continuum, play can thus blend with other motives and attitudes that are less playful, such as work. Unlike play, work is typically not viewed as enjoyable and it is extrinsically motivated (i.e. it is goal oriented). Researcher Joan Goodman (1994) suggested that hybrid forms of work and play are not a detriment to learning; rather, they can provide optimal contexts for learning. For example, a child may be engaged in a difficult, goal-directed activity set up by their teacher, but they may still be actively engaged and intrinsically motivated. At this mid-point between play and work, the child's motivation, coupled with guidance from an adult, can create robust opportunities for playful learning.

Critically, recent research supports the idea that adults can facilitate children's learning while maintaining a playful approach in interactions known as 'guided play' (Fisher et al. 2011). The adult's role in play varies as a function of their educational goals and the child's developmental level (Hirsch-Pasek et al. 2009).

Guided play takes two forms. At a very basic level, adults can enrich the child's environment by providing objects or experiences that promote aspects of a curriculum. In the more direct form of guided play, parents or other adults can support children's play by joining in the fun as a co-player, raising thoughtful questions, commenting on children's discoveries, or encouraging further exploration or new facets to the child's activity. Although playful learning can be somewhat structured, it must also be child-centered (Nicolopolou et al. 2006). Play should stem from the child's own desire.

Both free and guided play are essential elements in a child-centered approach to playful learning. Intrinsically motivated free play provides the child with true autonomy, while guided play is an avenue through which parents and educators can provide more targeted learning experiences. In either case, play should be actively engaged, it should be predominantly child-directed, and it must be fun.

Questions 27–31

Look at the following statements (Questions 27–31) and the list of researchers below.

Match each statement with the correct researcher, **A–G**.

Write the correct letter, **A–G**, in boxes 27–31 on your answer sheet.

- 27 Play can be divided into a number of separate categories.
- 28 Adults' intended goals affect how they play with children.
- 29 Combining work with play may be the best way for children to learn.
- 30 Certain elements of play are more significant than others.
- 31 Activities can be classified on a scale of playfulness.

List of Researchers

- A** Elkind
- B** Miller & Almon
- C** Rubin et al.
- D** Stuart Brown
- E** Pellegrini
- F** Joan Goodman
- G** Hirsch-Pasek et al.

Test 3

Questions 32–36

Do the following statements agree with the claims of the writer in Reading Passage 3?

In boxes 32–36 on your answer sheet, write

YES	<i>if the statement agrees with the claims of the writer</i>
NO	<i>if the statement contradicts the claims of the writer</i>
NOT GIVEN	<i>if it is impossible to say what the writer thinks about this</i>

- 32 Children need toys in order to play.
- 33 It is a mistake to treat play and learning as separate types of activities.
- 34 Play helps children to develop their artistic talents.
- 35 Researchers have agreed on a definition of play.
- 36 Work and play differ in terms of whether or not they have a target.

Questions 37–40

Complete the summary below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 37–40 on your answer sheet.

Guided play

In the simplest form of guided play, an adult contributes to the environment in which the child is playing. Alternatively, an adult can play with a child and develop the play, for instance by 37 the child to investigate different aspects of their game. Adults can help children to learn through play, and may make the activity rather structured, but it should still be based on the child's 38 to play.

Play without the intervention of adults gives children real 39 ; with adults, play can be 40 at particular goals. However, all forms of play should be an opportunity for children to have fun.

WRITING

WRITING TASK 1

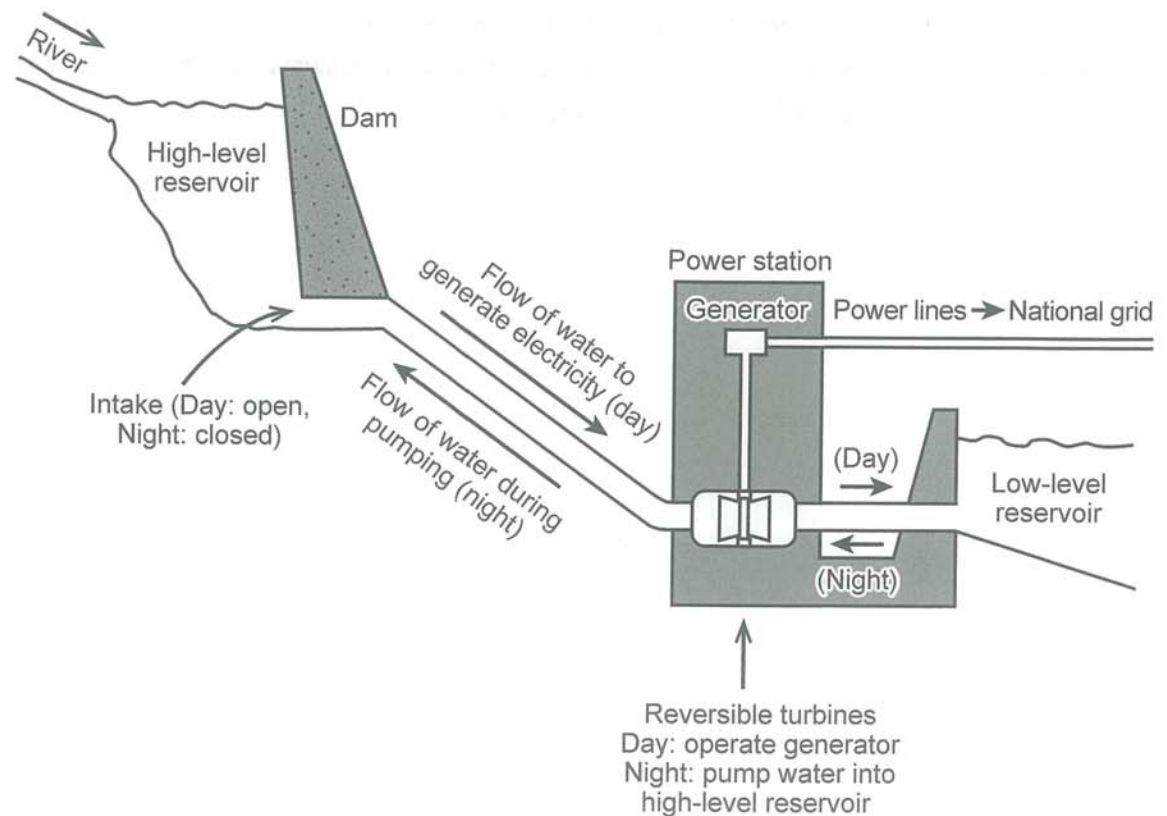
You should spend about 20 minutes on this task.

The diagram below shows how electricity is generated in a hydroelectric power station.

Summarise the information by selecting and reporting the main features, and make comparisons where relevant.

Write at least 150 words.

Hydroelectric power station



WRITING TASK 2

You should spend about 40 minutes on this task.

Write about the following topic:

Some people say that music is a good way of bringing people of different cultures and ages together.

To what extent do you agree or disagree with this opinion?

Give reasons for your answer and include any relevant examples from your own knowledge or experience.

Write at least 250 words.

SPEAKING

PART 1

The examiner asks the candidate about him/herself, his/her home, work or studies and other familiar topics.

EXAMPLE

Neighbours

- How often do you see your neighbours? [Why/Why not?]
- Do you invite your neighbours to your home? [Why/Why not?]
- Do you think you are a good neighbour? [Why/Why not?]
- Has a neighbour ever helped you? [Why/Why not?]

PART 2

Describe a very difficult task that you succeeded in doing as part of your work or studies.

You should say:

- what task you did**
- why this task was very difficult**
- how you worked on this task**

and explain how you felt when you had successfully completed this task.

what task you did
why this task was very difficult
how you worked on this task

and explain how you felt when you had successfully completed this task.

You will have to talk about the topic for one to two minutes. You have one minute to think about what you are going to say. You can make some notes to help you if you wish.

PART 3

Discussion topics:

Difficult jobs

Example questions:

What are the most difficult jobs that people do?

Why do you think some people choose to do difficult jobs?

Do you agree or disagree that all jobs are difficult sometimes?

Personal and career success

Example questions:

How important is it for everyone to have a goal in their personal life?

Is it always necessary to work hard in order to achieve career success?

Do you think that successful people are always happy people?

Test 4

LISTENING

SECTION 1 Questions 1–10

Questions 1–7

Complete the notes below.

Write **ONE WORD AND/OR A NUMBER** for each answer.

Enquiry about booking hotel room for event
<i>Example</i> Andrew is the <i>Events</i> Manager
Rooms Adelphi Room number of people who can sit down to eat: 1 has a gallery suitable for musicians can go out and see the 2 in pots on the terrace terrace has a view of a group of 3 Carlton Room number of people who can sit down to eat: 110 has a 4 view of the lake Options Master of Ceremonies: can give a 5 while people are eating will provide 6 if there are any problems Accommodation: in hotel rooms or 7

Test 4

Questions 8–10

What is said about using each of the following hotel facilities?

Choose **THREE** answers from the box and write the correct letter, **A**, **B** or **C**, next to Questions 8–10.

Availability

- A** included in cost of hiring room
- B** available at extra charge
- C** not available

Hotel facilities

- 8 outdoor swimming pool
- 9 gym
- 10 tennis courts

SECTION 2 Questions 11–20

Questions 11–16

What information does the speaker give about each of the following excursions?

Choose **SIX** answers from the box and write the correct letter, **A–H**, next to Questions 11–16.

Information

- A** all downhill
- B** suitable for beginners
- C** only in good weather
- D** food included
- E** no charge
- F** swimming possible
- G** fully booked today
- H** transport not included

Excursions

- 11** dolphin watching
- 12** forest walk
- 13** cycle trip
- 14** local craft tour
- 15** observatory trip
- 16** horse riding

Test 4

Questions 17 and 18

Choose **TWO** letters, **A–E**.

Which **TWO** things does the speaker say about the attraction called *Musical Favourites*?

- A You pay extra for drinks.
- B You must book it in advance.
- C You get a reduction if you buy two tickets.
- D You can meet the performers.
- E You can take part in the show.

Questions 19 and 20

Choose **TWO** letters, **A–E**.

Which **TWO** things does the speaker say about the *Castle Feast*?

- A Visitors can dance after the meal.
- B There is a choice of food.
- C Visitors wear historical costume.
- D Knives and forks are not used.
- E The entertainment includes horse races.

SECTION 3 Questions 21–30

Questions 21–25

Choose the correct letter, **A**, **B** or **C**.

- 21 What does Trevor find interesting about the purpose of children's literature?
- A the fact that authors may not realise what values they're teaching
 - B the fact that literature can be entertaining and educational at the same time
 - C the fact that adults expect children to imitate characters in literature
- 22 Trevor says the module about the purpose of children's literature made him
- A analyse some of the stories that his niece reads.
 - B wonder how far popularity reflects good quality.
 - C decide to start writing some children's stories.
- 23 Stephanie is interested in the Pictures module because
- A she intends to become an illustrator.
 - B she can remember beautiful illustrations from her childhood.
 - C she believes illustrations are more important than words.
- 24 Trevor and Stephanie agree that comics
- A are inferior to books.
 - B have the potential for being useful.
 - C discourage children from using their imagination.
- 25 With regard to books aimed at only boys or only girls, Trevor was surprised
- A how long the distinction had gone unquestioned.
 - B how few books were aimed at both girls and boys.
 - C how many children enjoyed books intended for the opposite sex.

Test 4

Questions 26–30

What comment is made about each of these stories?

Choose **FIVE** answers from the box and write the correct letter, **A–G**, next to Questions 26–30.

Comments

- A** translated into many other languages
- B** hard to read
- C** inspired a work in a different area of art
- D** more popular than the author's other works
- E** original title refers to another book
- F** started a new genre
- G** unlikely topic

Stories

- 26** Perrault's fairy tales
- 27** *The Swiss Family Robinson*
- 28** *The Nutcracker and The Mouse King*
- 29** *The Lord of the Rings*
- 30** *War Horse*

SECTION 4 Questions 31–40

Complete the notes below.

Write **ONE WORD ONLY** for each answer.

The hunt for sunken settlements and ancient shipwrecks

ATLIT-YAM

- was a village on coast of eastern Mediterranean
- thrived until about 7,000 BC
- stone homes had a courtyard
- had a semicircle of large stones round a **31**
- cause of destruction unknown – now under the sea
- biggest settlement from the prehistoric period found on the seabed
- research carried out into structures, **32** and human remains

TRADITIONAL AUTONOMOUS UNDERWATER VEHICLES (AUVs)

- used in the oil industry, e.g. to make **33**
- problems: they were expensive and **34**

LATEST AUVs

- much easier to use, relatively cheap, sophisticated

Tests:

- Marzamemi, Sicily: found ancient Roman ships carrying architectural elements made of **35**

Underwater internet:

- **36** is used for short distance communication, acoustic waves for long distance
- plans for communication with researchers by satellite
- AUV can send data to another AUV that has better **37** , for example

Planned research in Gulf of Baratti:

- to find out more about wrecks of ancient Roman ships, including
 - one carrying **38** supplies; tablets may have been used for cleaning the **39**
 - others carrying containers of olive oil or **40**

READING

READING PASSAGE 1

You should spend about 20 minutes on **Questions 1–13**, which are based on Reading Passage 1 below.

The secret of staying young

Pheidole dentata, a native ant of the south-eastern U.S., isn't immortal. But scientists have found that it doesn't seem to show any signs of aging. Old worker ants can do everything just as well as the youngsters, and their brains appear just as sharp. 'We get a picture that these ants really don't decline,' says Ysabel Giraldo, who studied the ants for her doctoral thesis at Boston University.

Such age-defying feats are rare in the animal kingdom. Naked mole rats can live for almost 30 years and stay fit for nearly their entire lives. They can still reproduce even when old, and they never get cancer. But the vast majority of animals deteriorate with age just like people do. Like the naked mole rat, ants are social creatures that usually live in highly organised colonies. 'It's this social complexity that makes *P. dentata* useful for studying aging in people,' says Giraldo, now at the California Institute of Technology. Humans are also highly social, a trait that has been connected to healthier aging. By contrast, most animal studies of aging use mice, worms or fruit flies, which all lead much more isolated lives.

In the lab, *P. dentata* worker ants typically live for around 140 days. Giraldo focused on ants at four age ranges: 20 to 22 days, 45 to 47 days, 95 to 97 days and 120 to 122 days. Unlike all previous studies, which only estimated how old the ants were, her work tracked the ants from the time the pupae became adults, so she knew their exact ages. Then she put them through a range of tests.

Giraldo watched how well the ants took care of the young of the colony, recording how often each ant attended to, carried and fed them. She compared how well 20-day-old and 95-day-old ants followed the telltale scent that the insects usually leave to mark a trail to food. She tested how ants responded to light and also measured how active they were by counting how often ants in a small dish walked across a line. And she experimented with how ants react to live prey: a tethered fruit fly. Giraldo expected the older ants to perform poorly in all these tasks. But the elderly insects were all good caretakers and trail-followers—the 95-day-old ants could track the scent even longer than their younger counterparts. They all responded to light well, and the older ants were more active. And when it came to reacting to prey, the older ants attacked the poor fruit fly just as aggressively as the young ones did, flaring their mandibles or pulling at the fly's legs.

Then Giraldo compared the brains of 20-day-old and 95-day-old ants, identifying any cells that were close to death. She saw no major differences with age, nor was there any difference in the location of the dying cells, showing that age didn't seem to affect specific brain functions. Ants and other insects have structures in their brains called mushroom bodies, which are important for

Test 4

Questions 1–8

Complete the notes below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answer in boxes 1–8 on your answer sheet.

Ysabel Giraldo's research

Focused on a total of 1 different age groups of ants, analysing

Behaviour:

- how well ants looked after their 2
- their ability to locate 3 using a scent trail
- the effect that 4 had on them
- how 5 they attacked prey

Brains:

- comparison between age and the 6 of dying cells in the brains of ants
- condition of synaptic complexes (areas in which 7 meet) in the brain's 'mushroom bodies'
- level of two 8 in the brain associated with ageing

Questions 9–13

Do the following statements agree with the information given in Reading Passage 1?

In boxes 9–13 on your answer sheet, write

TRUE if the statement agrees with the information
FALSE if the statement contradicts the information
NOT GIVEN if there is no information on this

- 9 *Pheidole dentata* ants are the only known animals which remain active for almost their whole lives.
- 10 Ysabel Giraldo was the first person to study *Pheidole dentata* ants using precise data about the insects' ages.
- 11 The ants in Giraldo's experiments behaved as she had predicted that they would.
- 12 The recent studies of bees used different methods of measuring age-related decline.
- 13 *Pheidole dentata* ants kept in laboratory conditions tend to live longer lives.

READING PASSAGE 2

You should spend about 20 minutes on **Questions 14–26**, which are based on Reading Passage 2 below.

Why zoos are good

Scientist David Hone makes the case for zoos

- A** In my view, it is perfectly possible for many species of animals living in zoos or wildlife parks to have a quality of life as high as, or higher than, in the wild. Animals in good zoos get a varied and high-quality diet with all the supplements required, and any illnesses they might have will be treated. Their movement might be somewhat restricted, but they have a safe environment in which to live, and they are spared bullying and social ostracism by others of their kind. They do not suffer from the threat or stress of predators, or the irritation and pain of parasites or injuries. The average captive animal will have a greater life expectancy compared with its wild counterpart, and will not die of drought, of starvation or in the jaws of a predator. A lot of very nasty things happen to truly 'wild' animals that simply don't happen in good zoos, and to view a life that is 'free' as one that is automatically 'good' is, I think, an error. Furthermore, zoos serve several key purposes.
- B** Firstly, zoos aid conservation. Colossal numbers of species are becoming extinct across the world, and many more are increasingly threatened and therefore risk extinction. Moreover, some of these collapses have been sudden, dramatic and unexpected, or were simply discovered very late in the day. A species protected in captivity can be bred up to provide a reservoir population against a population crash or extinction in the wild. A good number of species only exist in captivity, with many of these living in zoos. Still more only exist in the wild because they have been reintroduced from zoos, or have wild populations that have been boosted by captive bred animals. Without these efforts there would be fewer species alive today. Although reintroduction successes are few and far between, the numbers are increasing, and the very fact that species have been saved or reintroduced as a result of captive breeding proves the value of such initiatives.
- C** Zoos also provide education. Many children and adults, especially those in cities, will never see a wild animal beyond a fox or pigeon. While it is true that television documentaries are becoming ever more detailed and impressive, and many natural history specimens are on display in museums, there really is nothing to compare with seeing a living creature in the flesh, hearing it, smelling it, watching what it does and having the time to absorb details. That alone will bring a greater understanding and perspective to many, and hopefully give them a greater appreciation for wildlife, conservation efforts and how they can contribute.

Test 4

Questions 14–17

Reading Passage 2 has six paragraphs, **A–F**.

Which paragraph contains the following information?

Write the correct letter, **A–F**, in boxes 14–17 on your answer sheet.

- 14 a reference to how quickly animal species can die out
- 15 reasons why it is preferable to study animals in captivity rather than in the wild
- 16 mention of two ways of learning about animals other than visiting them in zoos
- 17 reasons why animals in zoos may be healthier than those in the wild

Questions 18–22

Do the following statements agree with the information given in Reading Passage 2?

In boxes 18–22 on your answer sheet, write

TRUE	if the statement agrees with the information
FALSE	if the statement contradicts the information
NOT GIVEN	if there is no information on this

- 18 An animal is likely to live longer in a zoo than in the wild.
- 19 There are some species in zoos which can no longer be found in the wild.
- 20 Improvements in the quality of TV wildlife documentaries have resulted in increased numbers of zoo visitors.
- 21 Zoos have always excelled at transmitting information about animals to the public.
- 22 Studying animals in zoos is less stressful for the animals than studying them in the wild.

Questions 23 and 24

Choose **TWO** letters, **A–E**.

Write the correct letters in boxes 23 and 24 on your answer sheet.

Which **TWO** of the following are stated about zoo staff in the text?

- A Some take part in television documentaries about animals.
- B Some travel to overseas locations to join teams in zoos.
- C Some get experience with species in the wild before taking up zoo jobs.
- D Some teach people who are involved with conservation projects.
- E Some specialise in caring for species which are under threat.

Questions 25 and 26

Choose **TWO** letters, **A–E**.

Write the correct letters in boxes 25 and 26 on your answer sheet.

Which **TWO** of these beliefs about zoos does the writer mention in the text?

- A They can help children overcome their fears of wild animals.
- B They can increase public awareness of environmental issues.
- C They can provide employment for a range of professional people.
- D They can generate income to support wildlife conservation projects.
- E They can raise animals which can later be released into the wild.

READING PASSAGE 3

You should spend about 20 minutes on **Questions 27–40**, which are based on Reading Passage 3 below.

Chelsea Rochman, an ecologist at the University of California, Davis, has been trying to answer a dismal question: Is everything terrible, or are things just very, very bad?

Rochman is a member of the National Center for Ecological Analysis and Synthesis's marine-debris working group, a collection of scientists who study, among other things, the growing problem of marine debris, also known as ocean trash. Plenty of studies have sounded alarm bells about the state of marine debris; in a recent paper published in the journal *Ecology*, Rochman and her colleagues set out to determine how many of those perceived risks are real.

Often, Rochman says, scientists will end a paper by speculating about the broader impacts of what they've found. For example, a study could show that certain seabirds eat plastic bags, and go on to warn that whole bird populations are at risk of dying out. 'But the truth was that nobody had yet tested those perceived threats,' Rochman says. 'There wasn't a lot of information.'

Rochman and her colleagues examined more than a hundred papers on the impacts of marine debris that were published through 2013. Within each paper, they asked what threats scientists had studied – 366 perceived threats in all – and what they'd actually found.

In 83 percent of cases, the perceived dangers of ocean trash were proven true. In the remaining cases, the working group found the studies had weaknesses in design and content which affected the validity of their conclusions – they lacked a control group, for example, or used faulty statistics.

Strikingly, Rochman says, only one well-designed study failed to find the effect it was looking for, an investigation of mussels ingesting microscopic plastic bits. The plastic moved from the mussels' stomachs to their bloodstreams, scientists found, and stayed there for weeks – but didn't seem to stress out the shellfish.

While mussels may be fine eating trash, though, the analysis also gave a clearer picture of the many ways that ocean debris *is* bothersome.

Within the studies they looked at, most of the proven threats came from plastic debris, rather than other materials like metal or wood. Most of the dangers also involved large pieces of debris – animals getting entangled in trash, for example, or eating it and severely injuring themselves.

But a lot of ocean debris is 'microplastic', or pieces smaller than five millimeters. These may be ingredients used in cosmetics and toiletries, fibers shed by synthetic clothing in the wash, or eroded remnants of larger debris. Compared to the number of studies investigating large-scale debris, Rochman's group found little research on the effects of these tiny bits. 'There are a lot of open questions still for microplastic,' Rochman says, though she notes that more papers on the subject have been published since 2013, the cutoff point for the group's analysis.

There are also, she adds, a lot of open questions about the ways that ocean debris can lead to sea-creature death. Many studies have looked at how plastic affects an individual animal, or that animal's tissues or cells, rather than whole populations. And in the lab, scientists often use higher concentrations of plastic than what's really in the ocean. None of that tells us how many birds or fish or sea turtles could die from plastic pollution – or how deaths in one species could affect that animal's predators, or the rest of the ecosystem.

'We need to be asking more ecologically relevant questions,' Rochman says. Usually, scientists don't know exactly how disasters such as a tanker accidentally spilling its whole cargo of oil and polluting huge areas of the ocean will affect the environment until after they've happened. 'We don't ask the right questions early enough,' she says. But if ecologists can understand how the slow-moving effect of ocean trash is damaging ecosystems, they might be able to prevent things from getting worse.

Asking the right questions can help policy makers, and the public, figure out where to focus their attention. The problems that look or sound most dramatic may not be the best places to start. For example, the name of the 'Great Pacific Garbage Patch' – a collection of marine debris in the northern Pacific Ocean – might conjure up a vast, floating trash island. In reality though, much of the debris is tiny or below the surface; a person could sail through the area without seeing any trash at all. A Dutch group called 'The Ocean Cleanup' is currently working on plans to put mechanical devices in the Pacific Garbage Patch and similar areas to suck up plastic. But a recent paper used simulations to show that strategically positioning the cleanup devices closer to shore would more effectively reduce pollution over the long term.

'I think clearing up some of these misperceptions is really important,' Rochman says. Among scientists as well as in the media, she says, 'A lot of the images about strandings and entanglement and all of that cause the perception that plastic debris is killing everything in the ocean.' Interrogating the existing scientific literature can help ecologists figure out which problems really need addressing, and which ones they'd be better off – like the mussels – absorbing and ignoring.

Test 4

Questions 27–33

Do the following statements agree with the information given in Reading Passage 3?

In boxes 27–33 on your answer sheet, write

TRUE if the statement agrees with the information
FALSE if the statement contradicts the information
NOT GIVEN if there is no information on this

- 27 Rochman and her colleagues were the first people to research the problem of marine debris.
- 28 The creatures most in danger from ocean trash are certain seabirds.
- 29 The studies Rochman has reviewed have already proved that populations of some birds will soon become extinct.
- 30 Rochman analysed papers on the different kinds of danger caused by ocean trash.
- 31 Most of the research analysed by Rochman and her colleagues was badly designed.
- 32 One study examined by Rochman was expecting to find that mussels were harmed by eating plastic.
- 33 Some mussels choose to eat plastic in preference to their natural diet.

Questions 34–39

Complete the notes below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 34–39 on your answer sheet.

Findings related to marine debris

Studies of marine debris found the biggest threats were

- plastic (not metal or wood)
 - bits of debris that were 34 (harmful to animals)
- There was little research into 35 e.g. from synthetic fibres.

Drawbacks of the studies examined

- most of them focused on individual animals, not entire 36
- the 37 of plastic used in the lab did not always reflect those in the ocean
- there was insufficient information on
 - numbers of animals which could be affected
 - the impact of a reduction in numbers on the 38 of that species
 - the impact on the ecosystem

Rochman says more information is needed on the possible impact of future 39 (e.g. involving oil).

Question 40

Choose the correct letter, **A**, **B**, **C** or **D**.

Write the correct letter in box 40 on your answer sheet.

40 What would be the best title for this passage?

- A** Assessing the threat of marine debris
- B** Marine debris: who is to blame?
- C** A new solution to the problem of marine debris
- D** Marine debris: the need for international action

WRITING

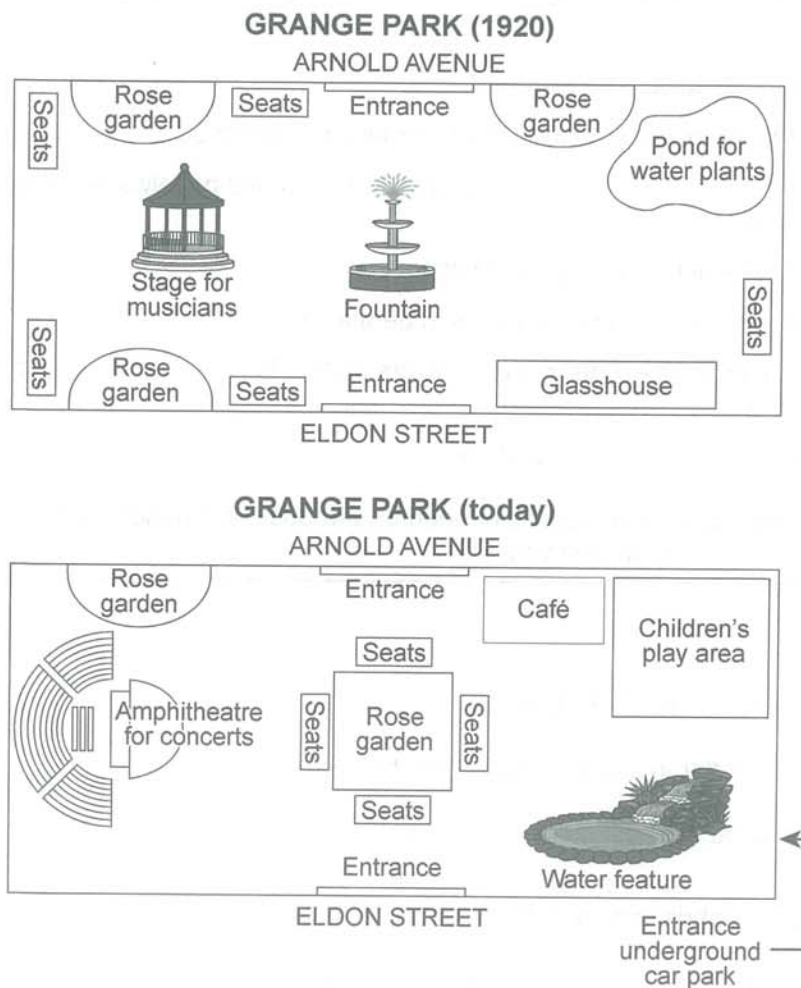
WRITING TASK 1

You should spend about 20 minutes on this task.

The plans below show a public park when it first opened in 1920 and the same park today.

Summarise the information by selecting and reporting the main features, and make comparisons where relevant.

Write at least 150 words.



WRITING TASK 2

You should spend about 40 minutes on this task.

Write about the following topic:

Nowadays many people choose to be self-employed, rather than to work for a company or organisation.

Why might this be the case?

What could be the disadvantages of being self-employed?

Give reasons for your answer and include any relevant examples from your own knowledge or experience.

Write at least 250 words.

SPEAKING

PART 1

The examiner asks the candidate about him/herself, his/her home, work or studies and other familiar topics.

EXAMPLE

Your neighbourhood

- Do you like the neighbourhood you live in? [Why/Why not?]
- What do you do in your neighbourhood in your free time? [Why/Why not?]
- What new things would you like to have in your neighbourhood? [Why/Why not?]
- Would you like to live in another neighbourhood in your town or city? [Why/Why not?]

PART 2

Describe a website you have bought something from.

You should say:

what the website is

what you bought from this website

how satisfied you were with what you bought

and explain what you liked and disliked about using this website.

You will have to talk about the topic for one to two minutes. You have one minute to think about what you are going to say. You can make some notes to help you if you wish.

PART 3

Discussion topics:

Shopping online

Example questions:

What kinds of things do people in your country often buy from online shops?

Why has online shopping become so popular in many countries?

What are some possible disadvantages of buying things from online shops?

Online retail businesses

Example questions:

Do you agree that the prices of all goods should be lower on internet shopping sites than in shops?

Will large shopping malls continue to be popular, despite the growth of internet shopping?

Do you think that some businesses (e.g. banks and travel agents) will only operate online in the future?

Listening and Reading answer keys

TEST 1

LISTENING

Section 1, Questions 1–10

- 1 Canadian
- 2 furniture
- 3 Park
- 4 250 (sterling)
- 5 phone
- 6 10(th) September
- 7 museum
- 8 time
- 9 blond(e)
- 10 87954 82361

Section 2, Questions 11–20

11&12 IN EITHER ORDER

- A
C

13&14 IN EITHER ORDER

- B
E

- 15 B
16 B
17 C
18 A
19 A
20 C

Section 3, Questions 21–30

- 21 B
- 22 A
- 23 C
- 24 B
- 25 A
- 26 B
- 27 A
- 28 F
- 29 G
- 30 C

Section 4, Questions 31–40

- 31 industry
- 32 constant
- 33 direction
- 34 floor
- 35 predictable
- 36 bay
- 37 gates
- 38 fuel
- 39 jobs
- 40 migration

If you score ...

0–18	19–27	28–40
you are unlikely to get an acceptable score under examination conditions and we recommend that you spend a lot of time improving your English before you take IELTS.	you may get an acceptable score under examination conditions but we recommend that you think about having more practice or lessons before you take IELTS.	you are likely to get an acceptable score under examination conditions but remember that different institutions will find different scores acceptable.

TEST 1

READING

Reading Passage 1, Questions 1–13

- 1 creativity
- 2 rules
- 3 cities

4&5 IN EITHER ORDER

- traffic
- crime
- 6 competition
- 7 evidence
- 8 life
- 9 TRUE
- 10 TRUE
- 11 NOT GIVEN
- 12 FALSE
- 13 TRUE

Reading Passage 2, Questions 14–26

- 14 E
- 15 C
- 16 F
- 17 C
- 18 A

19&20 IN EITHER ORDER

- B
- D

21&22 IN EITHER ORDER

- D
- E
- 23 activists
- 24 consumerism
- 25 leaflets
- 26 police

Reading Passage 3, Questions 27–40

- 27 E
- 28 D
- 29 B
- 30 D
- 31 C
- 32 YES
- 33 NO
- 34 NO
- 35 NOT GIVEN
- 36 restaurants
- 37 performance
- 38 turnover
- 39 goals
- 40 characteristics

If you score ...

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TEST 2**LISTENING****Section 1, Questions 1–10**

- 1 219 442 9785
- 2 10(th) October
- 3 manager
- 4 Cawley
- 5 knee
- 6 3 weeks
- 7 tennis
- 8 running
- 9 shoulder
- 10 vitamins

Section 2, Questions 11–20

- 11 B
- 12 C
- 13 C
- 14 B
- 15 A
- 16 H
- 17 D
- 18 F
- 19 A
- 20 E

Section 3, Questions 21–30

- 21 B
- 22 C
- 23 A
- 24 A
- 25 E
- 26 D
- 27 A
- 28 H
- 29 G
- 30 C

Section 4, Questions 31–40

- 31 dances
- 32 survival
- 33 clouds
- 34 festivals
- 35 comets
- 36 sky
- 37 instruments
- 38 thermometer
- 39 storms
- 40 telegraph

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TEST 2

READING

Reading Passage 1, Questions 1–13

- 1 FALSE
- 2 TRUE
- 3 NOT GIVEN
- 4 FALSE
- 5 NOT GIVEN
- 6 TRUE
- 7 FALSE
- 8 TRUE
- 9 merchant
- 10 equipment
- 11 gifts
- 12 canoe
- 13 mountains

Reading Passage 2, Questions 14–26

- 14 F
- 15 C
- 16 E
- 17 D
- 18 B
- 19 design(s)

- 20 pathogens
- 21 tuberculosis
- 22 wards
- 23 communal
- 24 public
- 25 miasmas
- 26 cholera

Reading Passage 3, Questions 27–40

- 27 vi
- 28 i
- 29 iii
- 30 ii
- 31 ix
- 32 vii
- 33 iv
- 34 viii
- 35 productive
- 36 perfectionists
- 37 dissatisfied
- 38 TRUE
- 39 FALSE
- 40 NOT GIVEN

If you score ...

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TEST 3**LISTENING****Section 1, Questions 1–10**

- 1 Tesla
- 2 microphone
- 3 exhibition
- 4 wifi
- 5 45
- 6 135
- 7 pool
- 8 airport
- 9 sea
- 10 clubs

Section 2, Questions 11–20**11&12 IN EITHER ORDER**

- A
E

13&14 IN EITHER ORDER

- B
E

- 15 F
16 A
17 E
18 G
19 D
20 C

Section 3, Questions 21–30

- 21 50
- 22 regional
- 23 carnival
- 24 drummer
- 25 film
- 26 parade
- 27 D
- 28 B
- 29 E
- 30 F

Section 4, Questions 31–40

- 31 violin
- 32 energy
- 33 complex
- 34 opera
- 35 disturbing
- 36 clarinet
- 37 diversity
- 38 physics
- 39 dance
- 40 Olympics

If you score...

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TEST 3

READING

**Reading Passage 1,
Questions 1–13**

- 1 B
- 2 A
- 3 D
- 4 NOT GIVEN
- 5 NO
- 6 YES
- 7 B
- 8 C
- 9 B
- 10 A
- 11 A
- 12 C
- 13 A

**Reading Passage 2,
Questions 14–26**

- 14 C
- 15 H
- 16 A
- 17 F
- 18 I
- 19 B
- 20 E

21&22 IN EITHER ORDER

- B
- C
- 23 ecology
- 24 prey
- 25 habitats
- 26 antibiotics

**Reading Passage 3,
Questions 27–40**

- 27 B
- 28 G
- 29 F
- 30 E
- 31 C
- 32 NO
- 33 YES
- 34 NOT GIVEN
- 35 NO
- 36 YES
- 37 encouraging
- 38 desire
- 39 autonomy
- 40 targeted

If you score ...

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TEST 4**LISTENING****Section 1, Questions 1–10**

- 1 85
- 2 roses
- 3 trees
- 4 stage
- 5 speech
- 6 support
- 7 cabins
- 8 C
- 9 A
- 10 B

Section 3, Questions 21–30

- 21 A
- 22 C
- 23 A
- 24 B
- 25 B
- 26 F
- 27 E
- 28 C
- 29 B
- 30 G

Section 2, Questions 11–20

- 11 G
- 12 D
- 13 A
- 14 E
- 15 F
- 16 B
- 17&18 *IN EITHER ORDER*
- B
- D
- 19&20 *IN EITHER ORDER*
- A
- D

Section 4, Questions 31–40

- 31 spring
- 32 tools
- 33 maps
- 34 heavy
- 35 marble
- 36 light
- 37 camera(s)
- 38 medical
- 39 eyes
- 40 wine

If you score...

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TEST 4

READING

Reading Passage 1, Questions 1–13

- 1 four / 4
- 2 young
- 3 food
- 4 light
- 5 aggressively
- 6 location
- 7 neurons
- 8 chemicals
- 9 FALSE
- 10 TRUE
- 11 FALSE
- 12 NOT GIVEN
- 13 TRUE

Reading Passage 2, Questions 14–26

- 14 B
- 15 E
- 16 C
- 17 A
- 18 TRUE
- 19 TRUE
- 20 NOT GIVEN

- 21 FALSE
- 22 NOT GIVEN
- 23&24 IN EITHER ORDER
B
D
- 25&26 IN EITHER ORDER
B
E

Reading Passage 3, Questions 27–40

- 27 FALSE
- 28 NOT GIVEN
- 29 FALSE
- 30 TRUE
- 31 FALSE
- 32 TRUE
- 33 NOT GIVEN
- 34 large
- 35 microplastic
- 36 populations
- 37 concentrations
- 38 predators
- 39 disasters
- 40 A

If you score ...

0–17	18–26	27–40
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